APPENDIX A

Field Reconnaissance Memorandum

Memo

TO:	Chuck Anderson/S&W	**DATE:**	May 12, 2009
FROM:	David Ritzman Jim French	**PROJ. NO.:**	13815.001.0
CC:	Liza McNulty/S&W Beeson Liang/PGE	**PROJ. NAME:**	Uvas Creek Levee Recertification
SUBJECT:	**Summary of Geotechnical Field Reconnaissance – Uvas Creek North Bank Levee, Gilroy, California**		

INTRODUCTION

The Santa Clara Valley Water District (District) has initiated a project to evaluate and recertify District-owned levees in accordance with Federal Emergency Management Agency (FEMA) flood mapping standards. To qualify for recertification, the levees must be shown to conform to the requirements of Title 44 of the Code of Federal Regulations (44 CFR), Section 65.10, which includes minimum certification standards for levee design, operations, and maintenance.

The District has retained Schaaf & Wheeler (S&W), with AMEC Geomatrix, Inc. (AMEC; formerly known as Geomatrix Consultants, Inc.) and Pacific Geotechnical Engineering (PGE) as geotechnical subconsultants, to perform topographic surveying, geotechnical exploration, laboratory testing, and hydraulic and engineering analyses, calculations, and evaluations necessary to recertify the existing Uvas Creek north bank levee in Gilroy, California. Upon completion of these efforts, certification documents will be prepared by S&W and submitted to FEMA by the District for accreditation and incorporation of the levees into appropriate Flood Insurance Rate Maps (FIRMs).

As an initial step in the recertification process, AMEC reviewed available information and performed geotechnical field reconnaissance of the Uvas Creek north bank levee, which runs along the north bank of the creek from a point approximately 1,100 feet downstream of the Santa Teresa Boulevard Bridge to a point approximately 2,100 feet downstream of the Thomas Road/Luchessa Avenue Bridge. The purpose of the reconnaissance was to observe levee conditions and identify areas for further investigation and study. Reconnaissance efforts were primarily focused on identifying geotechnical issues of concern, including potential settlement, slope instability, and seepage problems. However, other related considerations also were observed and documented as part of the reconnaissance, including the presence and condition of closures and penetrations; erosion; encroachments by vegetation, utilities, and structures; and maintenance considerations.

This technical memorandum presents the findings of AMEC's field reconnaissance and discusses key observations, geotechnical issues of concern, and other issues of potential concern related to the proposed recertification of the Uvas Creek north bank levee. Also, this

AMEC Geomatrix, Inc.
2101 Webster Street, 12th Floor
Oakland, California
USA 94612-3066
Tel (510) 663-4100
Fax (510) 663-4141
www.amecgeomatrixinc.com

memorandum identifies areas and conditions that require further investigation and/or study and suggests possible maintenance solutions that may be implemented to mitigate potential problems encountered during the reconnaissance.

RECONNAISSANCE ACTIVITIES

Field reconnaissance of the levee along the north bank of Uvas Creek was performed by Mr. David Ritzman (California GE #2710), a Senior Engineer with AMEC, on May 22, 23, and 27, 2008. Reconnaissance activities included the following:

- visually observing the levees, creek channel, and adjacent areas for evidence of settlement, erosion, ground deformation/cracking, and potential stability problems
- approximately measuring levee dimensions and slope inclinations
- identifying the presence and condition of erosion protection measures, outfalls, closures, floodwalls, and other structures and improvements along the levee alignments
- identifying trees, utilities, and other features that encroach on levee slopes
- observing water levels and flow conditions in the creek channel
- photographing the levees, adjacent areas, and other features of interest
- locating utilities, penetrations, and other features of interest using handheld Global Positioning System (GPS) equipment

Conditions observed during the field reconnaissance were documented in levee field reconnaissance logs, copies of which are included as Attachment 1 to this memorandum. The field logs also include references to approximate project stationing, as well as brief descriptions of photographs and GPS locations collected during the reconnaissance effort. Photographs, along with accompanying descriptions and location references, are presented in Attachment 2. GPS locations and feature descriptions are presented in Attachment 3.

Locations of observations, photographs, and other features described in the field reconnaissance logs and in this memorandum are referenced to the District's levee stationing system, which begins at the downstream end of the levee and proceeds in the upstream direction. Aerial photographs of the levees, along with the District's stationing line, are shown on Figures 1 through 4. In the field, positions relative to the stationing line were estimated based on the locations of features visible on the aerial photographs. Distances were measured using a measuring wheel. Because of the inexact nature of these methods and measurements, references to District's stationing line presented in the field reconnaissance logs and this memorandum should be considered approximate.

LEVEE DESCRIPTION

As shown on Figures 1 through 4, the Uvas Creek north bank levee begins at Station 0+00, located approximately 2,100 feet downstream of the Thomas Road/Luchessa Avenue Bridge. From Station 0+00, the levee extends approximately 11,400 feet (2.2 miles) to Station 114+00, located near the intersection of Laurel Drive and Uvas Park Drive and approximately 1,100 feet downstream of the Santa Teresa Boulevard Bridge. The levee was constructed by the United States Army Corps of Engineers (USACE) in 1989. Between approximately Stations 36+00 and 83+00, it appears that the existing levee was constructed above or adjacent to a former levee and/or wooden flood wall along the bank of the creek.

For convenience in documenting observations during our field reconnaissance, the Uvas Creek north bank levee was divided into eleven reaches, each with relatively uniform characteristics in regards to geometry and/or configuration. The reaches range from approximately 470 to approximately 2,300 feet in length. Table 1 summarizes the location and general characteristics of each reach. In Attachment 1, more detailed reach descriptions are provided in the field reconnaissance logs.

As noted in Table 1, Reach 11 (Station 108+00 to 114+00) may not qualify as a levee: along this reach, the ground surface is relatively flat and there is no distinguishable outboard “toe” that lies at a lower elevation than the edge of the existing stream bank.

KEY OBSERVATIONS

During our field reconnaissance, each levee reach was visually screened for the following conditions:

- evidence of settlement (i.e., surface cracks, sinkholes, and hummocky/undulating ground)
- erosion (i.e., rills, gullies, scour around structures, and undercut or oversteepened levee and stream bank slopes)
- evidence of potential slope stability problems (i.e., steep and/or undercut slopes, surface cracks, and caving, bulging, slumping, or irregular ground surfaces)
- other ground deformation and/or cracking not obviously related to settlement, erosion or slope instability
- encroachments by vegetation or other improvements
- inadequate maintenance (i.e., mowing/vegetation control, debris/blockages in the channel, inoperable control structures, etc.)
- evidence of potential problems with walls, abutments, weirs, aprons, and other structures within the levee and channel area

- evidence of seepage (e.g., wetland-type vegetation, moist or wet ground, springs and/or boils on the outboard side of the levee)
- damaged, distressed, and/or blocked closures or interior drainage structures, including gates, flaps, and other devices for backflow control
- adverse channel conditions (i.e., blockages, excessive debris, sand/gravel bars, etc.)
- animal burrows

Where the above conditions were observed, the type, location, and severity of the condition were noted in the field reconnaissance logs. Observed conditions were subjectively assigned one of five severity levels: (1) slight, (2) slight to moderate, (3) moderate, (4) moderate to severe, and (5) severe. Each reach was screened for all of the above conditions; if a particular condition is not noted in the reach's reconnaissance log, it was not observed in the field.

Table 2 summarizes key observations made along each levee reach during the site reconnaissance. As shown in Table 2, key observations apply to one or more of the conditions described above. The severity of each condition as it relates to the observation is also presented in Table 2.

GEOTECHNICAL ISSUES OF POTENTIAL CONCERN

Geotechnical issues pertaining to levee certification include embankment and foundation stability, seepage, and settlement. For certification under FEMA standards, the following conditions must be demonstrated:

- Levee embankment and foundation stability will not be jeopardized under anticipated seepage and loading conditions associated with the base (i.e., the one-percent-annual-chance, or "100-year") flood.
- Embankment and foundation stability will not be jeopardized under anticipated seismic loading conditions.
- Potential settlement of the levee embankment will not cause the amount of freeboard to fall below required minimum values.

For existing levees, recertification efforts could be jeopardized by conditions that exhibit evidence of or indicate the potential for embankment and foundation instability, adverse seepage conditions, and/or excessive settlement.

In our opinion, the levee and channel conditions observed during field reconnaissance of the Uvas Creek north bank levee do not generally indicate serious geotechnical problems that could jeopardize potential levee recertification. However, a number of minor geotechnical issues of potential concern were noted during the reconnaissance. This section discusses conditions observed along the Uvas Creek north bank levee that directly and indirectly relate to stability, seepage, and settlement. Recommended approaches for additional investigation, study, and maintenance in these areas are also described, as appropriate.

Steep Levee and Stream Bank Slopes

Relatively steep levee and stream bank slopes present potential concerns for levee embankment and foundation stability. Although stability is a function of many factors, including slope height and properties of the underlying soil, steep slopes typically are more susceptible to instability than shallow slopes. If underlain by expansive soil, relatively steep slopes may also be subject to slope creep, a gradual downslope movement of near-surface soil in response to seasonal shrink-swell cycles.

During our field reconnaissance, levee and stream bank slopes steeper than approximately 2:1 (about 27 degrees) were identified for special consideration as to potential instability. The locations of these relatively steep slopes are summarized in Table 2. In general, steeper slope conditions were assigned a higher degree of severity, particularly where accompanied by other evidence of potential instability, such as severe erosion, ground deformation, and surface cracking.

A geotechnical investigation consisting of subsurface exploration and laboratory testing should be performed to identify and characterize soil and groundwater conditions in the vicinity of relatively steep levee and stream bank slopes. Information collected during the investigation should be used to develop appropriate soil parameters for evaluating the stability of existing levee and stream bank slopes under FEMA-designated loading conditions.

Ground Deformation and Cracking

During our field reconnaissance, cracks in the ground and pavement were observed along the crest of the levee between Stations 21+50 and 26+00 and between Stations 60+00 and 70+00. Specific locations and descriptions of ground and pavement cracks observed during our field reconnaissance are summarized in Table 2.

Ground deformation and cracking may be the result of many factors, including expansive soil, slope creep, slope instability, and settlement. Pavement may also crack as a result of excessive loading, thermal expansion, variation in subgrade materials and properties, and natural wear and aging. Because ground and pavement cracks have a variety of potential causes, they are not necessarily indicative of potential embankment and/or foundation instability. However, in identifying areas of potential concern for slope instability during the site reconnaissance, higher levels of severity were assigned to relatively wide, deep, continuous, and/or densely spaced cracks; cracks showing evidence of vertical offset; arcuate crack patterns; ground cracks; and cracks located adjacent to steep slopes. Ground deformation and cracking patterns consistent with significant settlement of levee embankments were not observed during our field reconnaissance.

Areas of significant ground deformation and cracking identified during our field reconnaissance should be further studied to examine potential causes and evaluate whether the cracks are due to marginal stability, incipient instability, and/or slope creep. Additional study may include geotechnical investigation to characterize subsurface conditions and identify strength and shrink-swell properties of embankment and underlying foundation materials. If the observed cracks are potentially related to slope instability, stability analyses based on subsurface information collected during the geotechnical investigation may be necessary.

As part of regular maintenance activities, levee and stream bank slopes should be observed for ground deformation and cracking that may indicate potential settlement or instability problems. If the observed deformation and cracking are the result of settlement or instability, appropriate measures should be implemented to mitigate the effects of ground movement and stabilize levee slopes. Open cracks should be filled or sealed to limit infiltration of surface water and reduce the potential for continued deformation and crack growth.

Older Fill Materials

The existing levee between approximately Stations 59+00 and 83+00 appears to be constructed adjacent to older levee fill materials. The location, nature and condition of these older fill materials may affect the stability of existing levee slopes.

Possible poorly compacted older fill materials may affect the stability of levee slopes constructed by the U.S. Army Corps of Engineers in 1989. Poorly compacted and relatively weak fill materials may contribute to a failure of older levee slopes and foundation materials under the existing levee. Failure of the older levee slope may cause instability of the newer levee because of loss of confining stress on the waterside slope. Settlement of poorly compacted foundation materials also may contribute to loss of freeboard of the existing levee.

A geotechnical investigation consisting of subsurface exploration and laboratory testing should be performed to identify and characterize older levee fill materials beneath and adjacent to the existing levee. Information collected during the investigation should be used to develop appropriate soil parameters for evaluating the stability of existing levee and stream bank slopes under FEMA-designated loading conditions.

Erosion and Scour

Erosion and scour within the stream channel have the potential to undermine levee and stream bank slopes and affect the stability of levee embankments and/or foundations. Areas of significant erosion and scour observed during our field reconnaissance are summarized and described in Table 2. In general, the observed erosion and scour are relatively minor and do not appear to significantly affect the potential stability of nearby slopes.

Further study of potential hydraulic conditions within the stream channel should be performed to identify areas where erosion and scour may cause oversteepening and/or undermining of stream bank or levee slopes. Where such conditions currently exist or may occur as a result of anticipated stream flows, the need for erosion control measures to protect levee and stream bank slopes should be evaluated. As described above, geotechnical investigation may be necessary in areas where erosion has led to the development of steep levee or stream bank slopes that require analyses to evaluate their stability under FEMA-designated loading conditions.

Existing erosion control measures within the stream channel, including riprap slope protection, should be regularly inspected and maintained to limit the potential for undermining and instability of levee and stream bank slopes. Healthy and continuous vegetative cover should be maintained on all exposed levee and stream bank slopes. Where erosion- and scour-related damage occurs, affected slopes and structures should be repaired and appropriate erosion control measures installed to protect against further damage.

Animal Burrows

Animal burrows may weaken levee and stream bank slopes and provide potential conduits for seepage and/or piping beneath and through levees. Burrow holes and associated piles of loose soil material also disturb the ground surface and may contribute to localized erosion of levee and stream bank slopes. Ground squirrel burrows can grow to 30 feet or more in length and extend 2 to 4 feet below the ground surface. Gopher burrows are typically shallower, but can extend for several hundred feet.

During our field reconnaissance, burrow holes less than about 2 to 3 inches in diameter were attributed to gophers, and burrow holes greater than about 2 to 3 inches in diameter were attributed to ground squirrels, although in most cases the actual type of burrowing animal that created the hole is uncertain. Because of their larger diameter and presumed depth, ground squirrel burrows observed in levee and stream bank slopes were typically assigned higher levels of relative severity than gopher burrows.

Areas of significant burrowing activity that were observed during our field reconnaissance are summarized and described in Table 2. In general, the severity of burrowing observed on the levee ranges from slight to moderate. However, localized areas of moderate to severe burrowing were noted on inboard levee and stream bank slopes between Stations 5+50 and 12+50 and between Stations 36+00 and 59+00.

During our field reconnaissance, heavy vegetation may have obscured evidence of burrowing activity on some levee embankment and stream bank slopes. A more thorough burrow survey, conducted at a time when the vegetation is lower, may be considered as part of further studies. Burrow surveys should be performed regularly as part of ongoing levee maintenance programs. Where significant burrowing activity is observed, appropriate measures to control gopher and/or ground squirrel populations, such as trapping and baiting, should be implemented. Levee embankments and foundations affected by burrowing activity should be repaired by backfilling burrows with cement grout and/or excavating and replacing burrowed materials with engineered fill.

Encroachments

As summarized and described in Table 2, encroachments identified during our field reconnaissance include structures, buried utilities, and trees located on, beneath, or adjacent to levee and stream bank slopes. While most of the observed encroachments do not appear to significantly affect the potential for seepage or embankment and foundation stability, some may become sources of concern if not properly managed and/or maintained.

Encroachments observed during our field reconnaissance that are of particular interest include the following:

- Utility crossings, including a reclaimed water pipeline that crosses and runs roughly parallel to the levee alignment between approximately Stations 45+00 and 58+00
- Irrigation lines and valve boxes along the crest of the levee between Stations 69+00 and 72+00
- Uvas Park Drive between Stations 60+00 and 64+00
- Large trees growing on inboard and outboard levee and stream bank slopes

Levee construction plans (USACE, 1987) indicate the presence of a 12-inch diameter reclaimed water pipeline that crosses from the outboard side of the levee to the inboard side of the levee near Station 45+00. From Station 45+00, the pipeline alignment turns to the northwest and runs beneath or adjacent to the inboard levee slope for about 1,300 feet. Near Station 58+00, the pipeline turns to the west and crosses the creek channel. As shown on the construction plans, the reclaimed water pipeline is located at an elevation approximately 10 feet below the crest of the levee. With the exception of several aboveground appurtenances at approximately Station 58+30, evidence of the reclaimed water pipeline was not observed during our field reconnaissance. Levee construction plans also show crossings of water drainage pipelines beneath the levee near Stations 28+00, 71+00 (Miller Avenue), and 96+00.

Irrigation, reclaimed water, and water pipelines that are damaged or improperly operated may cause saturation, erosion, and/or softening of surrounding soil. If necessary, repairs to damaged utilities may require excavation and replacement of levee embankment and foundation materials. Backfill materials around buried pipelines may provide a conduit for seepage beneath the levee. If backfill materials are not properly compacted, long-term settlement of the backfill also may cause deformation of overlying levee foundation and fill materials.

Between approximately Stations 60+00 and 64+00, the west shoulder of Uvas Park Drive encroaches on the outboard toe of the levee. Along this reach, the outboard levee slope is relatively steep and sparsely vegetated. Steep slopes and limited vegetative cover increase the potential for erosion, evidence of which is noted in the field reconnaissance logs (see Attachment 1). Steep slopes also increase the potential for instability and slope creep.

Decaying roots from large trees growing on the inboard and outboard slopes may weaken the embankment and foundation materials. Also, the roots may act as conduits for seepage into the levee slopes. Fallen or uprooted trees may damage the levee and stream bank slopes, leading to potential erosion and slope instability.

Further studies should examine the condition of and need for removing, relocating, and/or maintaining existing encroachments along the Uvas Creek north bank levee. Ongoing levee maintenance programs should include efforts to monitor and manage encroachments as appropriate. These efforts may include pruning or removing unhealthy, unstable, and/or interfering trees from levee and stream bank slopes. All encroachments should be managed and maintained in a manner that limits the potential for seepage, erosion, and instability of levee embankments and foundations.

OTHER ISSUES OF POTENTIAL CONCERN

Some non-geotechnical issues of potential concern also were observed during site reconnaissance activities. As summarized and described in Table 2, these issues include the presence and condition of outfalls and other embankment penetrations, adverse channel conditions, and miscellaneous maintenance considerations. The following sections describe these issues and discuss observations that may be relevant to further study, investigation and/or analysis by others.

Outfalls and Other Embankment Penetrations

During our field reconnaissance, existing storm drain outfalls and other levee penetrations were identified and observed for evidence of blockage, damage, and/or distress. Where accessible, the presence and condition of backflow prevention devices also were observed and documented. In most cases, outfalls observed during our field reconnaissance appear to be in relatively good condition. However, as described in Table 2, one outfall near Station 72+70 is partially blocked by vegetation and debris.

Point-of-discharge backflow prevention devices, such as check valves or flap gates, were not observed on any of the storm drain outfalls identified during our field reconnaissance. However, the outfalls may rely on upstream backflow prevention devices that were inaccessible, and therefore not located or observed during the reconnaissance. More detailed reconnaissance of storm drain manholes and vaults on the outboard sides of the levees may be considered as part of further studies. To maintain the effectiveness of the levees and associated flood control systems, ongoing maintenance programs should include regular inspection of outfalls, penetrations, and closures. Outfalls and closures should be cleared of debris and maintained in good working order to avoid backflow during periods of high water inside the levees.

Adverse Channel Conditions

During our field reconnaissance, access to the creek channel was limited by thick vegetation and steep stream bank slopes. Where the channel could be observed, adverse channel conditions were not documented. However, vegetation, debris, fallen trees, and other channel obstructions may be present in some areas. Hydraulic analyses performed for levee recertification should consider these potential channel conditions during development of estimated flood elevations. If necessary, vegetation and debris should be cleared from the channel to increase channel capacity and maintain an acceptable amount of freeboard above design flood elevations.

The stream channel should be regularly inspected for blockages and other adverse conditions that may lead to increased flood elevations and/or erosion of stream bank and levee slopes. As part of regular maintenance work, excess sediment and debris should be removed from the channel as necessary to maintain adequate flow. Heavy vegetation and other potential debris-trapping obstructions also should be identified and cleared from the channel if necessary.

Miscellaneous Maintenance Considerations

Miscellaneous maintenance considerations identified during our field reconnaissance are generally related to control of vegetation and burrowing animals. These considerations are discussed in relevant sections above and summarized and described in Table 2.

CONCLUSION

In our opinion, levee and channel conditions observed along the Uvas Creek north bank levee do not generally indicate serious geotechnical problems that could jeopardize potential levee recertification. However, a number of minor geotechnical issues and areas of potential concern were noted during the reconnaissance. Further investigation, study, and analysis of these issues are necessary to complete the recertification process and demonstrate adequate performance of the existing levees under FEMA-designated loading conditions. It is anticipated that most issues of potential concern identified during recent field reconnaissance activities can be addressed through appropriate levee and channel maintenance programs.

REFERENCES

U.S. Army Corps of Engineers, 1987, Levee Improvement and Construction Phase I Plan, Santa Clara County, California, Uvas Creek Levee at Gilroy, Pajaro River, California.

TABLES

TABLE 1

SUMMARY OF REACHES - LEVEE FIELD RECONNAISSANCE
Uvas Creek Levee Recertification Project, Phase A2
Gilroy, CA

		Station		Approximate Dimensions					Features of Interest				
Reach	Location/Description	From	To	Length (ft)	Height above Outboard Toe (ft)	Crest Width (ft)	Inboard Slope (degrees)[1]	Outboard Slope (degrees)[1]	Erosion Protection	Penetrations	Flood Wall	Other Structures	Utilities
1	Downstream end of the levee, extends from approximately 2,100 to 1,550 feet south of Luchessa Avenue/Thomas Road and south of the point at which the paved bicycle/pedestrian trail merges with the gravel access road that runs along the levee crest. Near the south end of this reach a rip rap slope lines the inboard and outboard levee toes.	0+00	5+50	550	8 - 10	8 - 10	22	28	X				X
2	Extending from approximately 1,550 to 850 feet south of Luchessa Avenue/Thomas Road, with a paved bicycle/pedestrian trail that runs along the levee crest.	5+50	12+50	700	8 - 10	16	22	26					X
3	Extending from approximately 850 to 150 feet south of and roughly parallel to Luchessa Avenue/Thomas Road, with paved bicycle/pedestrian trails on the inboard and outboard slopes and a gravel access road along the levee crest.	12+50	19+30	680	varies	10 - 12	varies	varies		X			
4	Extending from approximately 150 feet downstream to approximately 300 feet upstream of the Luchessa Avenue/Thomas Road Bridge, with paved bicycle/pedestrian trails on the inboard slope and levee crest.	19+30	24+00	470	8 - 10	20 - 25	20	26 - 40	X	X	X	X	X
5	Extending from approximately 300 to 1,500 feet upstream of the Luchessa Avenue/Thomas Road Bridge, behind the Gilroy High School tennis courts and football/track facilities, with a paved bicycle/pedestrian trail that runs along the levee crest.	24+00	36+00	1,200	8 - 10	16	20	26	X				
6	Extending from approximately 1,500 to 3,800 feet upstream of the Luchessa Avenue/Thomas Road Bridge, behind Gilroy High School athletic fields and open space near the west end of 10th Street, with a paved bicycle/pedestrian trail that runs along the levee crest.	36+00	59+00	2,300	9 - 10	14 - 16	20 - 22	28 - 30					X
7	Adjacent to Uvas Park Drive, from approximately 800 feet northwest of 10th Street to the Miller Avenue/Uvas Park Drive intersection, with a paved bicycle pedestrian trail that runs along the levee crest. The levee appears to be constructed on top of the outboard slope of a previous levee.	59+00	70+00	1,100	8 - 10	16	10 - 15	26 - 30		X	X		X
8	Adjacent to Uvas Park Drive from Miller Avenue to a gravel-surfaced parking area immediately northwest of the Uvas Park Drive/Wren Avenue intersection, with a paved bicycle/pedestrian trail that runs along the levee crest.	70+00	83+00	1,300	7 - 10	14 - 16	10 - 18	20 - 26		X			X
9	Extending from approximately 100 to 1,800 feet northwest of the Uvas park Drive/Wren Avenue intersection, with a relatively wide floodplain between the inboard toe of the levee and the low-flow creek channel and a paved bicycle/pedestrian trail that runs along the levee crest.	83+00	101+00	1,800	2 - 7	14 - 16	15 - 20	20 - 25		X			X
10	Extending from approximately 1,200 to 600 feet southeast of the Uvas Park Drive/Laurel Drive intersection, with a relatively wide floodplain between the inboard toe of the levee and the low-flow creek channel and a paved bicycle/pedestrian trail that runs along the levee crest.	101+00	108+00	700	0 - 2	14 - 16	5 - 15	10 - 20					
11	Upstream end of the levee, extending from approximately 1,600 to 1,100 feet downstream of the Santa Teresa Boulevard Bridge, ending at the intersection of Uvas Park Drive and Laurel Drive, with a paved bicycle/pedestrian trail that runs along the crest of the stream bank (See Note 2).	108+00	114+00	600	0	n/a[2]	n/a[2]	n/a[2]					

Notes:

1) Slopes estimated in the field using a Brunton compass
2) Reach 11 does not appear to qualify as a "levee". The ground surface on the outboard side of the stream bank is relatively flat and there is no distinguishable levee "toe" at a lower elevation than the crest of the stream bank.

TABLE 2

SUMMARY OF KEY OBSERVATIONS - LEVEE FIELD RECONNAISSANCE
Uvas Creek Levee Recertification Project, Phase A2
Gilroy, CA

Reach	Station		Key Observations	Observed Condition and Degree of Severity[1]											Potential Geotech Issue?	Follow-up	By[2]	Comments/Notes
	From	To		Settlement	Erosion	Stability	Ground Cracks or Deformation	Encroachments	Maintenance	Structural Problems	Seepage	Closures or Drainage	Adverse Channel	Animal Burrows				
1	0+00	5+50	Levees not mowed, thick vegetation obscures view of ground conditions						2							maintenance	SCVWD	
			Burrows on inboard and outboard slopes, mostly gopher holes [3]											3	X	maintenance	SCVWD	
2	5+50	12+50	Lower levee slopes not mowed, vegetation obscures view of inboard and outboard slopes						1							maintenance	SCVWD	
			Burrows on inboard and outboard slopes, mostly gopher with some ground squirrel holes [3]											4	X	maintenance	SCVWD	
3	12+50	19+30	Erosion on the outside edge of a bend in the creek has caused a very steep (average ~45°, but locally near-vertical) bank to develop and encroach on the toe of the levee (14+50 - 17+50); however, the inboard levee slope in this area is relatively wide and shallow to accommodated a paved bicycle trail that runs between the bank and levee crest		1	1									X	exploration/analysis	AMEC/PGE	
			Storm drain outfall, unable to view backflow prevention device (14+00)									1				inspection/maintenance	SCVWD	
			Burrows on inboard and outboard slopes, mostly gopher holes [3]											2	X	maintenance	SCVWD	
4	19+30	24+00	Moderately steep to very steep (~26-40°) outboard slope (21+50 - 23+80)			2									X	exploration/analysis	AMEC/PGE	
			Longitudinal cracks in pavement on outboard side of crest (21+50 - 23+80)				3								X	exploration/analysis	AMEC/PGE	
			Trees encroach on toe of outboard slope (21+50 - 24+00)					1								maintenance	SCVWD	See Note 4
			Storm drain outfall - unable to view backflow prevention device (21+50)									1				inspection/maintenance	SCVWD	
			Occasional burrows on outboard slope, mostly gopher holes [3] (inboard slope is riprap)											1	X	maintenance	SCVWD	
5	24+00	36+00	Longitudinal cracks in pavement on outboard side of crest (24+00 - 26+00)				2								X	exploration/analysis	AMEC/PGE	
			Trees encroach on toe of outboard slope (24+00 - 25+00 and 26+00 - 27+00)					1								maintenance	SCVWD	See Note 4
			Lower levee slopes not mowed, vegetation obscures view of inboard and outboard slopes						1							maintenance	SCVWD	
			Burrows on inboard and outboard slopes, mostly gopher holes [3]											3	X	maintenance	SCVWD	
6	36+00	59+00	Minor erosion and oversteepening of the levee slope adjacent to an unimproved path that runs along the inboard toe (38+00 - 40+00 and 47+00 to 50+00)		1										X	maintenance	SCVWD	
			Very steep (average ~45°, but locally near-vertical) creek bank slope approaches within approximately 20 to 40 feet of the inboard levee toe (36+00 - 40+00 and 43+00 - 48+00)		1	1									X	exploration/analysis	AMEC/PGE	
			Moderately steep (~28-30°) outboard slopes			1									X	exploration/analysis	AMEC/PGE	
			Trees occasionally encroach on toes of inboard and outboard slopes					1								maintenance	SCVWD	See Note 4
			12-inch diameter recycled water pipeline crossings (45+00, 58+30)					3								investigation/study	S&W/AMEC	See Note 5
			Burrows on inboard and outboard slopes, mostly gopher with some ground squirrel holes [3]											4	X	maintenance	SCVWD	
7	59+00	70+00	Steep (~30°) outboard slope is bare and somewhat oversteepened near toe (60+00 - 64+00)		1	1									X	exploration/analysis	AMEC/PGE	
			"New" levee fill appears to overlie older fill and is located within approximately 10 to 20 feet of an abandoned, approximately 3- to 4-foot-high, mostly decayed and collapsed wooden floodwall			1									X	exploration/analysis	AMEC/PGE	
			Minor longitudinal cracks in pavement at crest (60+00 - 64+00 and 69+00 - 70+00)				1								X	exploration/analysis	AMEC/PGE	
			Shoulder of Uvas Park Drive encroaches on outboard toe (60+00 - 64+00)					2								none	--	
			Abundant trees along floodwall and "old" levee fill, some encroach on "new" slopes					2								maintenance	SCVWD	See Note 4
			Water meter box and water irrigation lines running underneath the levee crest (69+30)					1								inspection/maintenance	SCVWD	
			Burrows on inboard and outboard slopes, mostly gopher with some large ground squirrel holes [3]											3	X	maintenance	SCVWD	

TABLE 2

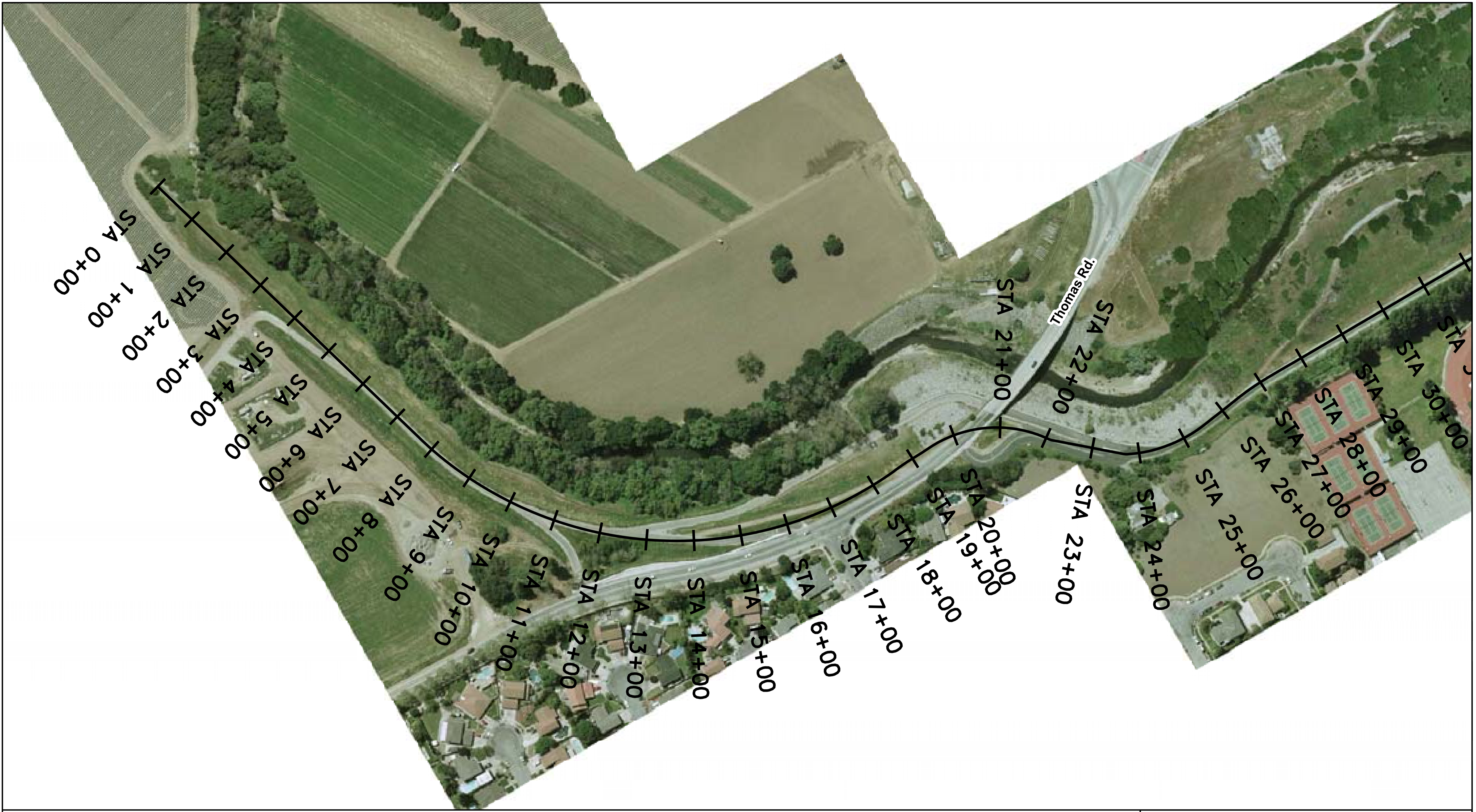
SUMMARY OF KEY OBSERVATIONS - LEVEE FIELD RECONNAISSANCE
Uvas Creek Levee Recertification Project, Phase A2
Gilroy, CA

Reach	Station		Key Observations	Observed Condition and Degree of Severity[1]											Potential Geotech Issue?	Follow-up	By[2]	Comments/Notes
	From	To		Settlement	Erosion	Stability	Ground Cracks or Deformation	Encroachments	Maintenance	Structural Problems	Seepage	Closures or Drainage	Adverse Channel	Animal Burrows				
8	70+00	83+00	Outboard slope is bare near toe (adjacent to shoulder of Uvas Park Drive)		1											maintenance	SCVWD	See Note 4
			"New" levee fill appears to overlie older fill			1									X	exploration/analysis	AMEC/PGE	
			Trees growing on "older" portion of inboard levee slope (79+00 - 83+00)					2								maintenance	SCVWD	See Note 4
			Storm drain outfall - partially clogged, unable to view backflow prevention device (72+70)						1			1				inspection/maintenance	SCVWD	
			Storm drain outfall - unable to view inlet or backflow prevention device (82+00)									2				inspection/maintenance	SCVWD	
			Water meter and valve boxes (71+40)					1								inspection/maintenance	SCVWD	
			Burrows on inboard and outboard slopes, mostly gopher with some large ground squirrel holes [3]											3	X	maintenance	SCVWD	
9	83+00	101+00	Steep (~25-30°) creek bank slope encroaches on inboard toe (88+00 - 95+00)		1	1									X	exploration/analysis	AMEC/PGE	
			Trees/shrubs common along inboard toe, occasionally encroach on outboard toe					2								maintenance	SCVWD	See Note 4
			Storm drain outfall - unable to view inlet or backflow prevention device (95+00)									2				inspection/maintenance	SCVWD	
			Burrows on inboard and outboard slopes, mostly gopher with some large ground squirrel holes [3]											3	X	maintenance	SCVWD	
10	101+00	108+00	Erosion of inboard streambank/levee slope, which is bare due to foot/bicycle traffic (106+00)		2											maintenance	SCVWD	See Note 4
			Burrows on inboard and outboard slopes, mostly gopher with some large ground squirrel holes [3]											2	X	maintenance	SCVWD	
11	108+00	114+00																See Note 6

Notes:

1) Severity Code: 1 = Slight, 2 = Slight to Moderate, 3 = Moderate, 4 = Moderate to Severe, 5 = Severe
2) AMEC = AMEC Geomatrix, PGE = Pacific Geotechnical Engineering, S&W = Schaaf & Wheeler, SCVWD = Santa Clara Valley Water District
3) For classification purposes, holes less than approximately 2 to 3 inches in diameter are considered indicative of gopher burrows and holes greater than approximately 2 to 3 inches in diameter are considered indicative of ground squirrel burrows
4) Others should evaluate the actual need for corrective action and develop appropriate corrective measures, if necessary
5) Two recycled water pipeline crossings are shown on Phase 1 levee improvement plans from the early 1980s (U.S. Army Corps of Engineers, undated). Pipeline appurtenances (valves, etc.) were observed near the pipeline crossing at Station 58+30, but evidence of the pipeline's presence was not observed near Station 45+00.
6) This reach does not appear to qualify as a "levee". The ground surface on the outboard side of the stream bank is relatively flat and there is no distinguishable levee "toe" at a lower elevation than the crest of the stream bank.

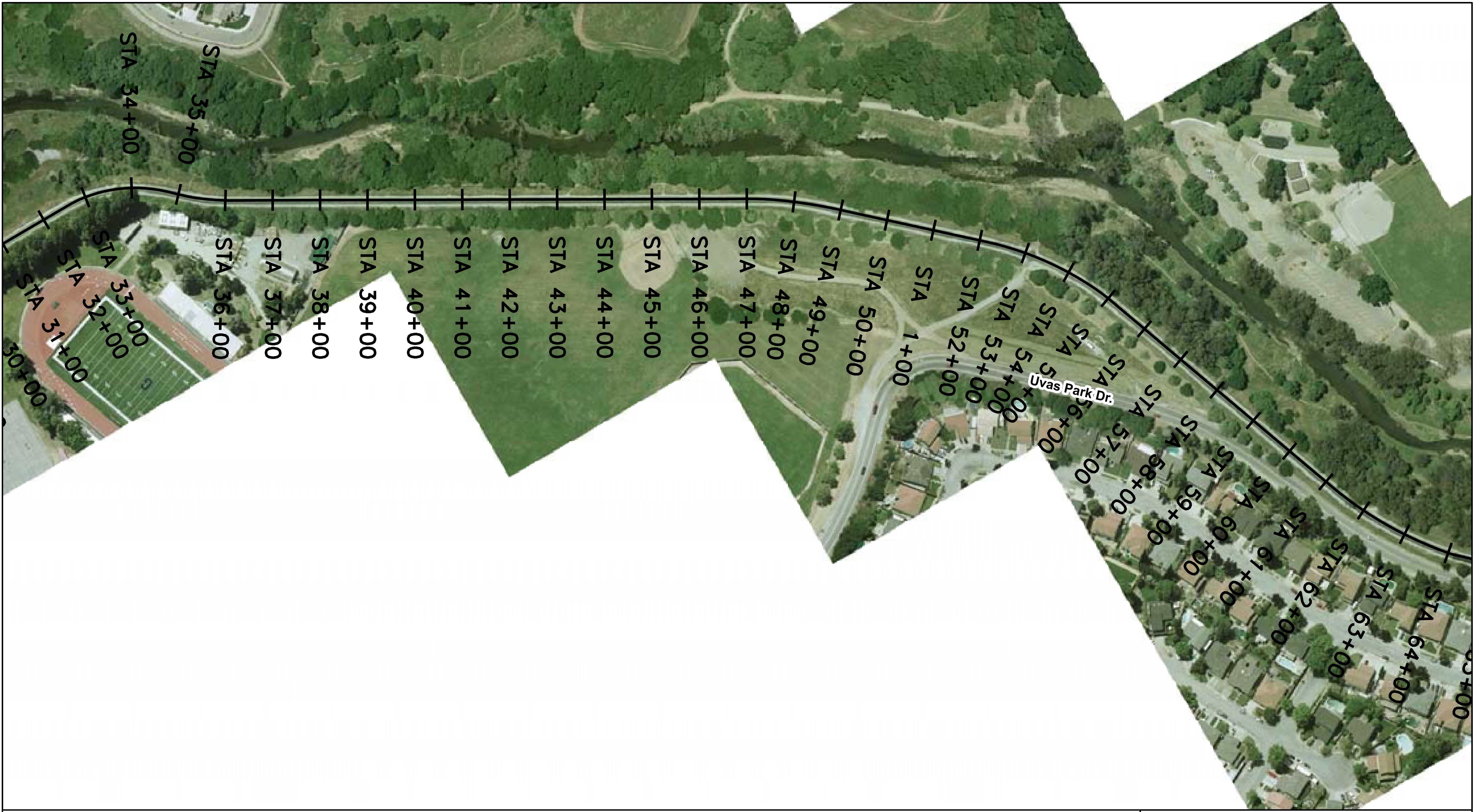
FIGURES



NORTH BANK LEVEE
Uvas Creek Levee
FEMA Levee Certification
Gilroy, California

By: DMO	Date: 4/10/2009	Project No. 13815.001
AMEC Geomatrix		Figure 1

File path: S:\13800\13815\13815.001\task_a3\09_0410_frm_fig_04_rotated_fig_1.mxd



0 100 200
Feet

N

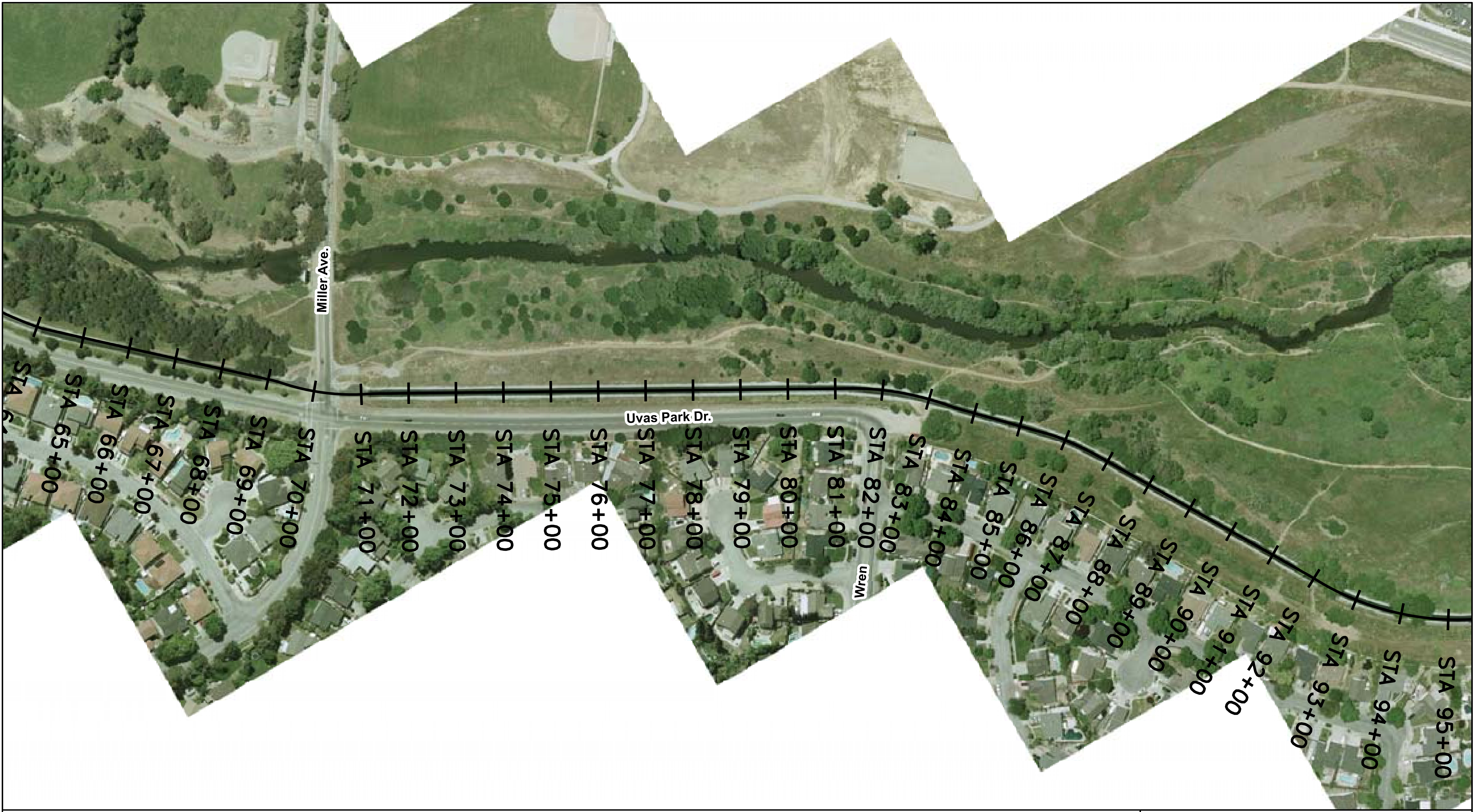
NORTH BANK LEVEE
Uvas Creek Levee
FEMA Levee Certification
Gilroy, California

By: DMO
Date: 4/10/2009
Project No. 13815.001

AMEC Geomatrix

Figure 2

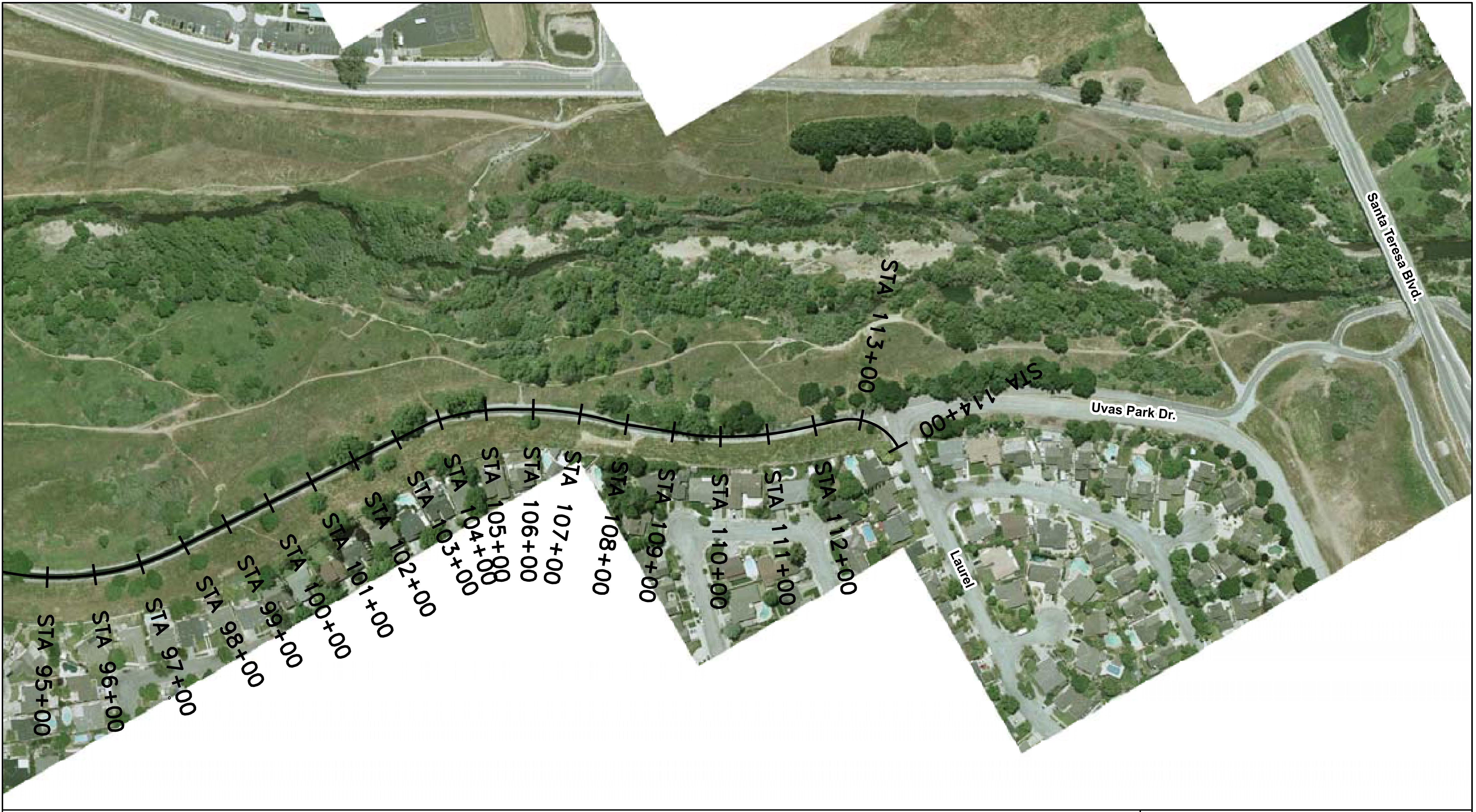
File path: S:\13800\13815\13815.001\task_a3\09_0410_frm_fig_03_rotated_fig_2.mxd



NORTH BANK LEVEE
Uvas Creek Levee
FEMA Levee Certification
Gilroy, California

By: DMO	Date: 4/10/2009	Project No. 13815.001
AMEC Geomatrix		Figure 3

File path: S:\13800\13815\13815.001\task_a3\09_0410_frm_fig_02_rotated_fig_3.mxd



0 100 200
Feet

N

NORTH BANK LEVEE
Uvas Creek Levee
FEMA Levee Certification
Gilroy, California

By: DMO	Date: 4/10/2009	Project No. 13815.001
AMEC Geomatrix		Figure 4

File path: S:\13800\13815\13815.001\task_a3\09_0410_frm_fig_01.mxd

ATTACHMENT 1

FIELD RECONNAISSANCE LOGS

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 3

Project Name: Uvas Creek Levee Recertification

Date: 5/22/08

Project Number: 13815.001.0

Weather Conditions: Sunny, Clear ≈ 80°

Location: Gilroy, CA

Observations Recorded by: D. Ritzman

Station Interval

From: 0+00 To: 5+50

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration:

Means of Measurement/Estimation

Height above Outboard Toe: 8-10 ft ☒ Visual ☐ Rod and Hand Level ☐ Other

Crest Width: 8-10 ft ☐ Visual ☒ Pace ☐ Tape ☐ Other

Inboard Slope: 22 [✓ deg] H:V % ☐ Visual ☒ Brunton Compass ☐ Other

Outboard Slope: 28 [✓ deg] H:V % ☐ Visual ☒ Brunton Compass ☐ Other

☒ Erosion Protection Type: Riprap on inboard/outboard slopes Location: 0+00 – 0+70 Condition: good

☐ Penetrations Type: Location: Condition:

☐ Floodwall Type: Location: Condition:

☐ Other Structures Type: Location: Condition:

Ground Cover:

	Inboard Slope	Outboard Slope	Crest	Comments
Bare Ground	☐	☐	☒	
Grass	☒	☒	☐	
Shrubs	☒	☒	☐	occasional shrubs 0+00 - 0+100
Trees	☐	☐	☐	
Riprap	☒	☒	☐	
Gravel	☐	☐	☒	
Pavement	☐	☒	☐	bicycle trail (paved) on outboard slope
Other	☐	☐	☐	

Additional Explanation/Notes:

Riprap limits at inboard/outboard toes are obscured by thick brush
Note 3 utility boxes (2 fiber optic? Communications) and water box ~~[illegible]~~
approx 15' from outboard toe near Sta. 4+50.

☐ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

Low water in creek channel. Active channel/riparian ~~[illegible]~~ corridor is >30 ft from inboard toe of levee.

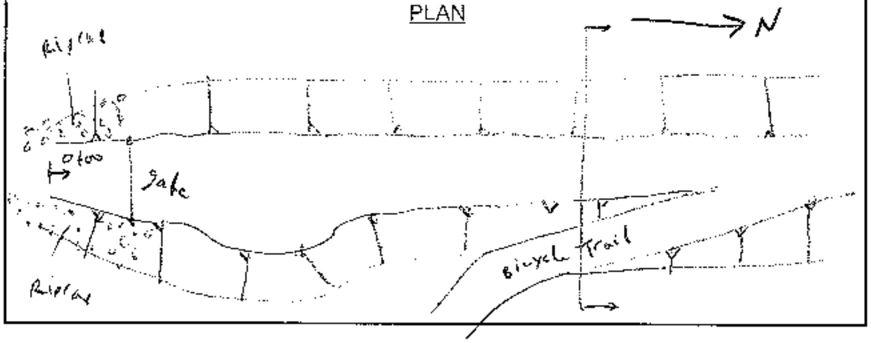
☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 3

Station Interval		Other Reach/Location ID
From: 0+00	To: 5+50	

SKETCHES

PLAN

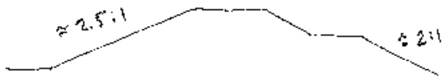


NOTES

PROFILE

SECTION

Facing North (up-station)



OBSERVATIONS

Check and indicate severity of all that apply:

		Slight	Moderate	Severe
☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
☐	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☐	☐	☐
☐	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☐	☐	☐
☐	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐	☐	☐
☐	**Encroachments by vegetation or other improvements**	☐	☐	☐
☒	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☐ ×	☐	☐
☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐	☐	☐
☐	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☐	☐	☐
☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
☒	**Animal burrows**	☐	☒	☐

Further describe the location, extent and nature of checked items:

Levee slopes not mowed from ≈ Sta. 5+00 to South end of levee (0+00). Thick vegetation obscured view of slope conditions in some areas.

Moderate gopher activity observed on inboard and outboard slopes. Holes at surface typically ≈ 2" in diameter.

☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 3 **OF** 3

Station Interval	Other Reach/Location ID
From: 0+00 To: 5+50	

PHOTOS

Photo ID	Location	Description
1	0+50 looking north	
2	0+50 looking south	
3	[illegible] 0+00	inboard riprap slope
4	0+50	outboard riprap slope
5	1+50	N/S views of inboard/outboard slopes
6	1+50	
7	1+50	
8	1+50	
9	4+00	N/S views of inboard/outboard slopes and crest
10	4+00	
11	4+00	
12	4+00	
13	4+00	
14	4+00	
15	5+50 " south	mowed vs. unmowed, inboard slope

SURVEY POINTS

Point ID	Location	Description
1	4+50, outboard toe	utility boxes
2	4+50 "	
3	4+50 "	

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 3

Project Name: Uvas Creek Levee Recertification
Date: 5/22/08
Project Number: 13815.001.0
Weather Conditions: Sunny, Clear ≈ 80°
Location: Gilroy, CA
Observations Recorded by: D. Ritzman

Station Interval
From: 5+50 To: 12+50

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration:

Means of Measurement/Estimation

Height above Outboard Toe:	8-10±	ft	☒ Visual	☐ Rod and Hand Level		☐ Other
Crest Width:	16	ft	☐ Visual	☐ Pace	☒ Tape	☐ Other
Inboard Slope:	≈ 22	[✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other
Outboard Slope:	≈ 26	[✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other

☐ Erosion Protection Type: Location: Condition:
☐ Penetrations Type: Location: Condition:
☐ Floodwall Type: Location: Condition:
☐ Other Structures Type: Location: Condition:

Ground Cover:

	Inboard Slope	Outboard Slope	Crest	Comments
Bare Ground	☐	☐	☐	
Grass	☒	☒	☐	
Shrubs	☐	☒	☐	Some trees/shrubs near toe of
Trees	☐	☒	☐	outboard slope at ≈ 11+50 – 12+50
Riprap	☐	☐	☐	
Gravel	☐	☐	☐	
Pavement	☐	☐	☒	Bike trail on crest (paved)
Other	☐	☐	☐	

Additional Explanation/Notes:

Utilities (communication, water, electric) indicated by boxes/vaults within ≈ 15-20 ft. of outboard toe. (between ≈ 6+50 and 9+50)

☐ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

Low flow in active creek channel, ~~located @~~ Active channel and riparian corridor located @ 25-30' inside inboard toe.

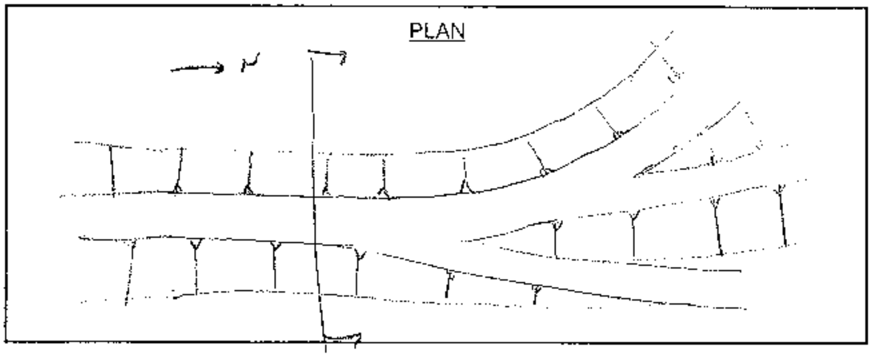
☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 3

Station Interval	Other Reach/Location ID
From: 5+50 To: 12+50	

SKETCHES

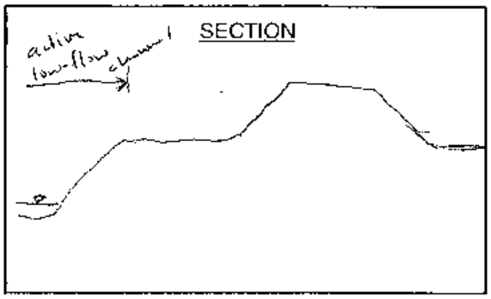
PLAN



NOTES

PROFILE

SECTION



OBSERVATIONS

Check and indicate severity of all that apply:

	Slight	Moderate	Severe
☐ **Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
☐ **Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☐	☐	☐
☐ **Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☐	☐	☐
☐ **Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐	☐	☐
☐ **Encroachments by vegetation or other improvements**	☐	☐	☐
☒ **Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☒	☐	☐
☐ **Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
☐ **Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐	☐	☐
☐ **Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☐	☐	☐
☐ **Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
☒ **Animal burrows**	☐	☐ X	☐

Further describe the location, extent and nature of checked items:

Limits of mowing extend ≈ 5 ft. (vertically) down inboard and outboard slopes.

Slight to moderate burrows on outboard slope. Moderate to Severe burrows on ~~outboard~~ inboard slope. Mostly smaller (≈ 2") gopher holes, but some larger (≈ 3") ground squirrel holes.

☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 3 **OF** 3

Station Interval		Other Reach/Location ID
From: 5+50	To: 12+50	

PHOTOS

Photo ID	Location	Description
16-19	8+00	Inboard, outboard Slopes, North + South Views
20-21	10+00	Burrows, inboard slope
22	11+00	Burrows, inboard slope
23 – 26	12+50	Inboard, outboard slopes, North + South views

SURVEY POINTS

Point ID	Location	Description
4		
5	7+00 – 9+50	} 4 utility boxes
6		
7		

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 4

Project Name: Uvas Creek Levee Recertification
Date: 5/22/08
Project Number: 13815.001.0
Weather Conditions: sunny, windy ≈ 80°
Location: Gilroy, CA
Observations Recorded by: D. Ritzman

Station Interval
From: 12+50 To: 19+30

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration:

Means of Measurement/Estimation

Height above Outboard Toe: Varies* ft ☒ Visual ☐ Rod and Hand Level ☐ Other
Crest Width: 10-12 ft ☐ Visual ☒ Pace ☐ Tape ☐ Other
Inboard Slope: varies deg H:V % ☐ Visual ☐ Brunton Compass ☐ Other
Outboard Slope: varies deg H:V % ☐ Visual ☐ Brunton Compass ☐ Other

☐ Erosion Protection Type: Location: Condition:
☒ Penetrations Type: 18" CMP S.D. outfall Location: 14+00 Condition: fair
☐ Floodwall Type: Location: Condition:
☐ Other Structures Type: Location: Condition:

Ground Cover:

	Inboard Slope	Outboard Slope	Crest
Bare Ground	☐	☐	☒
Grass	☒	☒	☐
Shrubs	☐	☐	☐
Trees	☐	☐	☐
Riprap	☐	☐	☐
Gravel	☐	☐	☒
Pavement	☐	☐	☒
Other	☐	☐	☐

Comments
crest is paved from 12+50 to 14+00, gravel and bare ground from ~~12+50~~ 14+00 to 19+30.

Additional Explanation/Notes:

*Height at 12+50 is ≈ 8-10 ft., becomes essentially zero where levee intersects Luchessa Ave. levee becomes ~~very~~ relatively wide as it ~~as~~ approaches Luchessa Ave., with ~~bicycle~~ paved bicycle trail benches on both inboard and outboard slopes.

☐ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

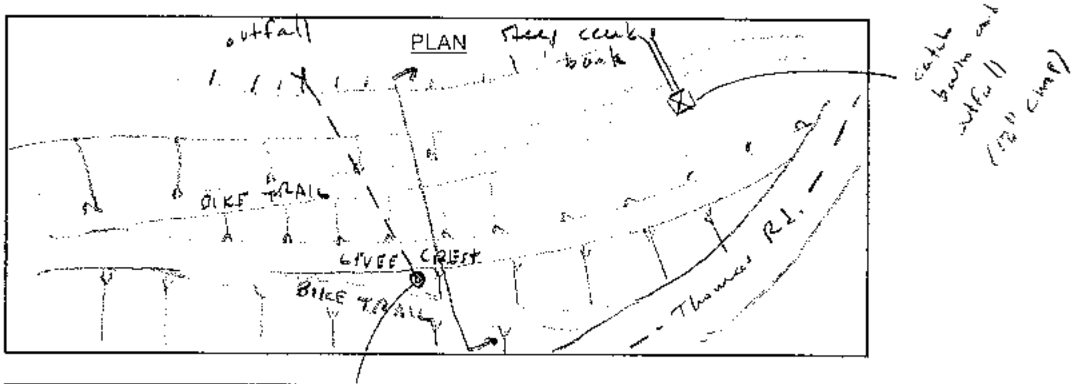
~~Riparian~~ low water in creek channel. Riparian corridor/active channel encroaches on ~~the~~ inboard slope (adjacent to ~~bicyc~~ bicycle bench).

☐ Continued at end of report

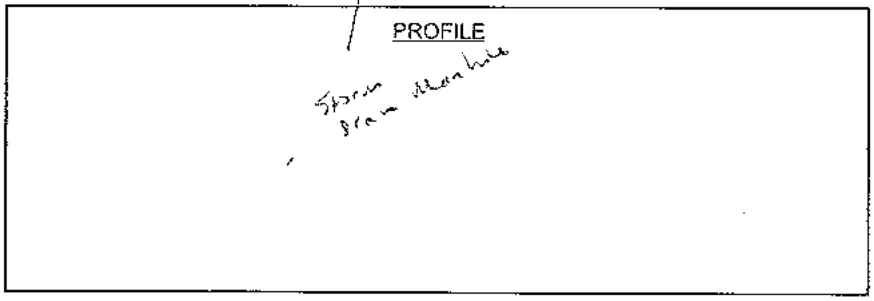
PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 4

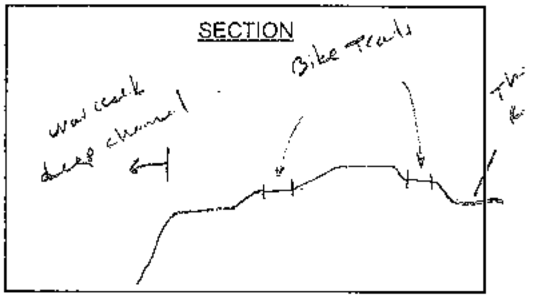
Station Interval	Other Reach/Location ID
From: 12+50 To: 14+30	

SKETCHES



NOTES





OBSERVATIONS

Check and indicate severity of all that apply:

			Slight	Moderate	Severe
	☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
a) {	☒	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☒	☐	☐
	☒	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☒	☐	☐
	☐	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐	☐	☐
	☐	**Encroachments by vegetation or other improvements**	☐	☐	☐
	☐	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☐	☐	☐
	☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
	☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐	☐	☐
b)	☒	**Damaged, distressed, and/or blocked closures or interior drainage structures** See notes (including gates, flaps, and/or other devices for backflow control)	☒	☐	☐
	☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
c)	☒	**Animal burrows**	☐ ×	☐	☐

Further describe the location, extent and nature of checked items:

Between Stations 14+50 and 17+50, steep creek bank slope comes within about 10 to 20 feet of the inboard levee toe (inboard of the bicycle trail). The channel slope is undercut and near vertical in some areas. Due to shallow levee slopes and the bicycle trails, the levee is relatively wide in this area. It looks like potential instability / erosion may be a localized issue along the bicycle trail, but due to the width of the levee may not be a big issue for overall stability. Note this area as a location to investigate further.

☒ Continued at end of report

PROJECT NUMBER: 13815.001.0 12+50 to 19+30 **PAGE** 3 **OF** 4

DESCRIPTIONS AND OBSERVATIONS, CONTINUED

b) Noted one penetrating storm drain near Sta. 19+00, Manhole at ≈ 19+80. ~~[illegible]~~ outfall is an 18" CMP, seems to be in fair condition, ~~[illegible]~~ No flap or backflow device observed. Manhole is locked ~~[illegible]~~ – could not see if backflow prevention is present or operable. Unable to check.

Noted a second catch basin and storm drain outlet near Station 18+50. This feature drains the interior levee slope between the crest and bicycle trail bench. The outfall does not penetrate the full width of the levee.

c) Slight to moderate animal burrows noted on inboard and outboard slopes.

PROJECT NUMBER: 13815.001.0 **PAGE** 4 **OF** 4

Station Interval	Other Reach/Location ID
From: 12+50 To: 19+30	

PHOTOS

Photo ID	Location	Description
~~[illegible]~~ 27 - 29	14+00	18" cmp outfall
30	14+80	SD Manhole
31	18+50	SD outlet (12" cmp)
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
32	14+00 from north	levee crest and bike trails
33 - 37	14+50 - 17+150	Steep Bank ~~[illegible]~~ near trail / toe of levee
38 - 43	19+30	Panorama

SURVEY POINTS

Point ID	Location	Description
8	14+00, creek bank	18" cmp outfall
9	14+80	Storm Drain Manhole
10	18+50	Storm drain outlet (Drains inboard slope only, not a full
11	18+50	Storm drain inlet penetration)

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 3

Project Name: Uvas Creek Levee Recertification

Project Number: 13815.001.0

Location: Gilroy, CA

Date: 5/22/08

Weather Conditions: Sunny, windy ≈ 80°

Observations Recorded by: D. Ritzman

Station Interval

From: 19+30 To: ~~[illegible]~~ 24+00

Other Reach/Location ID

Luchessa Ave. Bridge

LEVEE DESCRIPTION

Geometry and Configuration:

Means of Measurement/Estimation

Height above Outboard Toe: 8-10 ft	☒ Visual	☐ Rod and Hand Level		☐ Other
Crest Width: 20-25 ft	☐ Visual	☒ Pace	☐ Tape	☐ Other
Inboard Slope: wall + ≈ 20° bank slope deg H:V %	☐ Visual	☐ Brunton Compass		☐ Other
Outboard Slope: 26-40 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other

☒ Erosion Protection	Type: Riprap on creek bank / inboard slope	Location: 19+30 - 24+00	Condition: good
☒ Penetrations	Type: Storm drain outfall (1) 18" dia	Location: 21+50	Condition: fair - good
☒ Floodwall	Type: MSE w/ keystone facing	Location: 20+40 - 22+30	Condition: good
☒ Other Structures	Type: Bridge abutment	Location: 20+50 - 21+00	Condition: ~~good~~ good

Ground Cover:

	Inboard Slope	Outboard Slope	Crest	Comments
Bare Ground	☒ near crest	☐	☐	
Grass	☒ near crest	☒	☐	
Shrubs	☐	☒ at toe	☐	
Trees	☐	☒ at toe	☐	
Riprap	☒	☐	☐	
Gravel	☐	☐	☐	
Pavement	☒ Bicycle Trail	☐	☒ Bicycle Trail	
Other	☐	☐	☐	

Additional Explanation/Notes:

Inboard slope includes MSE wall w/ keystone block facing. Wall height varies from ~~To~~ ≈ 2 to 7 feet. Bicycle trail (≈ 15 ft. wide) runs along base of wall ~~[illegible]~~ beneath the bridge. Inboard slope below trail is ~~[illegible]~~ surfaced w/ Riprap.

One storm drain outfall at approx. Sta. 21+50, w/ manhole near crest. No flap on outfall, ~~[illegible]~~ Manhole is locked – could not observe presence / condition of any backflow prevention device.

☐ Continued at end of report

SURFACE WATER CONDITIONS

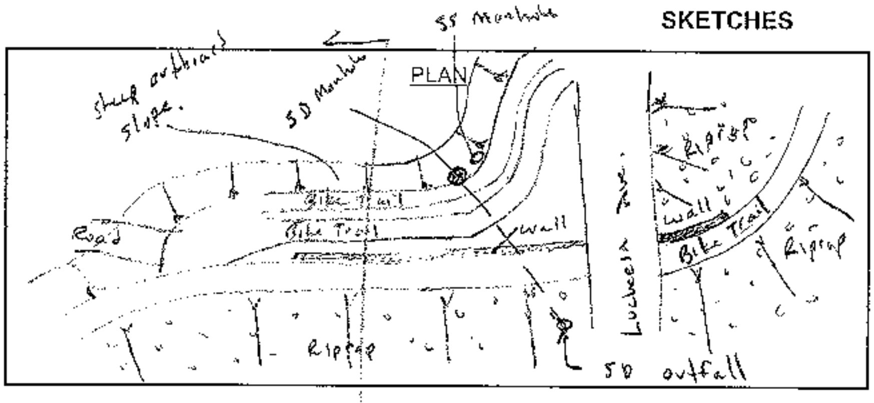
Flow conditions and water levels on the inboard side of the levee:

Low water flow in bottom of creek channel

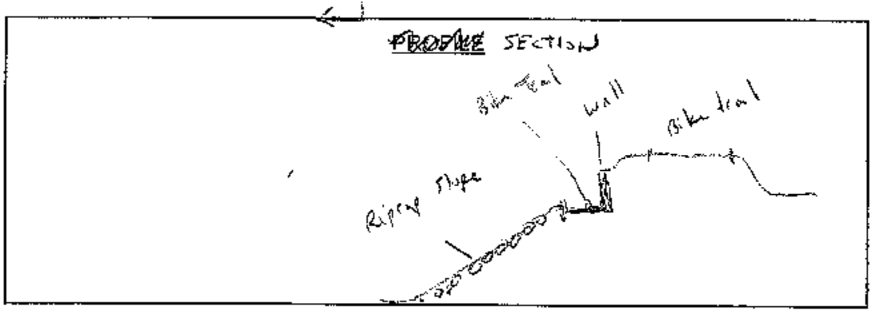
☐ Continued at end of report

Station Interval	Other Reach/Location ID
From: 19+30 To: 24+00	

SKETCHES



NOTES



~~SECTION~~

OBSERVATIONS

Check and indicate severity of all that apply:

			Slight	Moderate	Severe
	☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
	☐	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☐	☐	☐
a)	☒	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☐ X	☐	☐
	☒	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐	☒	☐
b)	☒	**Encroachments by vegetation or other improvements**	☒	☐	☐
	☐	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☐	☐	☐
	☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
	☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐	☐	☐
c)	☒	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control) — unable to observe	☒	☐	☐
	☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
d)	☒	**Animal burrows**	☒	☐	☐

Further describe the location, extent and nature of checked items:

a) Outboard slope north of bridge is relatively steep (≈ 1:1 to 2:1). Longitudinal cracking in pavement at top of slope may indicate some downward movement. Cracks observed from ≈ 21+50 to 23+90 and seem to be most severe where slope is the steepest.

b) Some trees at toe of outboard slope

c) Could not observe backflow device for outfall

d) Occasional burrows (mostly small gopher holes) on outboard slope

☐ Continued at end of report

PROJECT NUMBER: 13815.001.0

PAGE 3 **OF** 3

Station Interval		Other Reach/Location ID
From: 19+30	To: 24+00	

PHOTOS

Photo ID	Location	Description
44 - 45	21+50	18" cmp outfall and apron
46	20+00	channel and bridge
47, 48	20+00	Riprap protection around bridge abutment and approach
49, 50	20+50	MSE Wall
51, 52, 53	20+80	Bridge / Trail Drainage and outlets (under bridge) 12" cmp
54	23+00	MSE Wall + bridge
55	24+00	Levee crest
56	22+50, facing south	Outboard slope
57	22+00	SD and SS manholes
58 - 64	21+50 - 23+80	Longitudinal cracking at crest of outboard slope (note weeds growing from cracks)

SURVEY POINTS

Point ID	Location	Description
12	21+50	Sanitary sewer manhole
13	~~20~~' 21+50	Storm drain manhole (locked)
14	21+50	Storm drain outfall (18" cmp)
15, 16	20+40 – 22+80	Beginning and end of MSE wall

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 3

Project Name: Uvas Creek Levee Recertification
Date: 5/22/08
Project Number: 13815.001.0
Weather Conditions: Sunny, windy ≈ 80'
Location: Gilroy, CA
Observations Recorded by: D. Ritzman

Station Interval
From: 24+00 To: 36+00

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration:

				Means of Measurement/Estimation		
Height above Outboard Toe:	8-10 ft	☒ Visual	☐ Rod and Hand Level		☐ Other	
Crest Width:	16 ft	☐ Visual	☐ Pace	☒ Tape	☐ Other	
Inboard Slope:	20 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other	
Outboard Slope:	26 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other	

☒ Erosion Protection	Type: Riprap on inboard slope	Location: 24+00 - 26+20	Condition: good
☐ Penetrations	Type:	Location:	Condition:
☐ Floodwall	Type:	Location:	Condition:
☐ Other Structures	Type:	Location:	Condition:

Ground Cover:

	Inboard Slope	**Outboard Slope**	**Crest**	**Comments**
Bare Ground	☐	☐	☐	
Grass/weeds	☒	☒	☐	Several trees on outboard slope
Shrubs	☒ occasional, at toe	☒ occasional, at toe	☐	between 24+00 and 27+00
Trees	☒	☒	☐	
Riprap	☒ 24+00 - 26+20	☐	☐	
Gravel	☐	☐	☐	
Pavement	☐	☐	☒ A/C Bike Trail	
Other	☐	☐	☐	

Additional Explanation/Notes:

From 24+00 to 27+00 - Similar to previous section w/ riprap on inboard slope from edge of bike trail (levee crest) to ~~edge of~~ bottom of channel.

From 27+00 to 36+00, a relatively wide floodplain area (>50 ft. wide) lies between the toe of the inboard levee slope and the low-flow creek channel.

☐ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

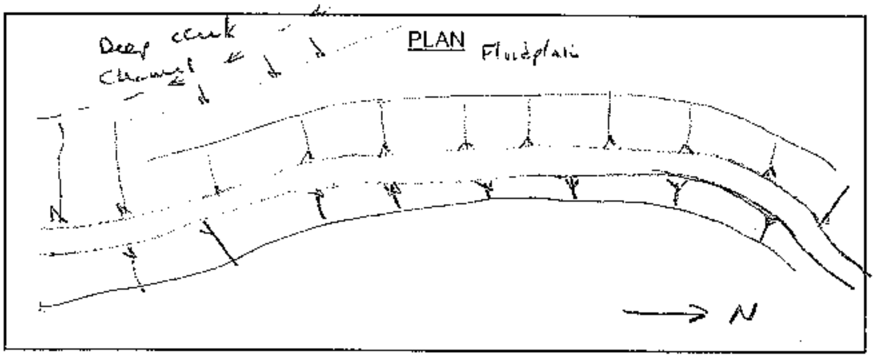
Low flow in creek, much lower than toe of levee, which is on the floodplain.

☐ Continued at end of report

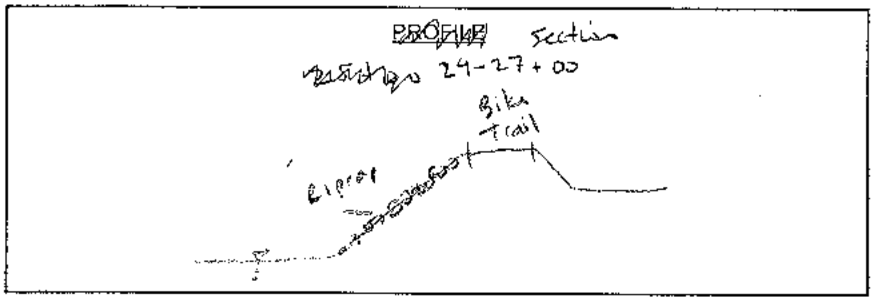
PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 3

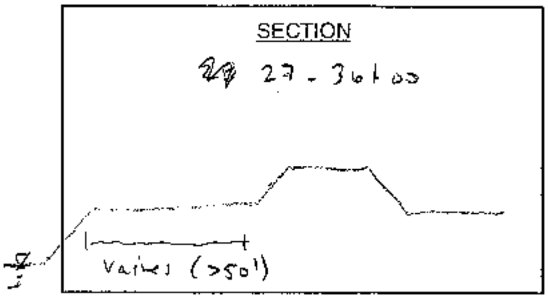
Station Interval	Other Reach/Location ID
From: 24+00 To: 36+00	

SKETCHES



NOTES





OBSERVATIONS

Check and indicate severity of all that apply:

			Slight	Moderate	Severe
	☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
	☐	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☐	☐	☐
	☐	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☐	☐	☐
a)	☒	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐ X	☐	☐
b)	☒	**Encroachments by vegetation or other improvements**	☒	☐	☐
c)	☒	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☒	☐	☐
	☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
	☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐	☐	☐
	☐	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☐	☐	☐
	☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
d)	☒	**Animal burrows** (Inboard and outboard slopes)	☐	☒	☐

Further describe the location, extent and nature of checked items:

a) Longitudinal cracking along edge of crest (outboard side) similar to that observed in previous section, but ~~[illegible]~~ less extensive. Sta. 24+00 - 26+00

b) Trees on outboard slope at Stas. 24+00 - 25+00, 26+00 - 27+00.

c) Mowing limited to within ≈ 3 ft. (vertical) of levee crest. Heavy grass/weed cover on lower slopes

d) Burrow activity appears moderate. However, thick grass and weeds obscure burrows - could be severe in some areas on both inboard and outboard slopes.

☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 PAGE 3 OF 3

Station Interval		Other Reach/Location ID
From:	To:	

PHOTOS

Photo ID	Location	Description
65	33+00	Monitoring well – unknown owner (8" box, flush-mount)
66	33+00, facing west	Inboard levee slope from floodplain area.
67 - 70	25+00	N. and S. view of inboard & outboard slopes
71	27+00	Burrow activity on inboard slope
72-75	29+00	N. and S. views of inboard and outboard slopes
76 - 79	32+50	N. and S. views of inboard and outboard slopes
80 - 83	35+00	N. and S. views of inboard and outboard slopes

SURVEY POINTS

Point ID	Location	Description
17	33+00	Monitoring well inboard of levee toe

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 4

Project Name: Uvas Creek Levee Recertification
Date: 5/23/08
Project Number: 13815.001.0
Weather Conditions: Sunny, Mild ≈ 75°
Location: Gilroy, CA
Observations Recorded by: D. Ritzman

Station Interval
From: 36+00 To: 59+00

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration:

Means of Measurement/Estimation

Height above Outboard Toe:	≈ 9-10 ft	☒ Visual	☐ Rod and Hand Level		☐ Other	
Crest Width:	14-16 ft	☐ Visual	☐ Pace	☒ Tape	☐ Other	
Inboard Slope:	20-22 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other	
Outboard Slope:	28-30 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other	

☐ Erosion Protection	Type:	Location:	Condition:
☒ Penetrations	Type: Unknown utilities (Recycled water?)	Location: 58+30	Condition:
☐ Floodwall	Type:	Location:	Condition:
☐ Other Structures	Type:	Location:	Condition:

Ground Cover:

	Inboard Slope	Outboard Slope	Crest	Comments
Bare Ground	☐	☐	☐	
Grass / weeds	☒	☒	☐	
Shrubs	☒ } Along Toe	☒ } Along Toe	☐	
Trees	☒	☒	☐	
Riprap	☐	☐	☐	
Gravel	☐	☐	☐	
Pavement	☐	☐	☒ A/C	Bicycle Trail
Other	☐	☐	☐	

Additional Explanation/Notes:

Levee section is relatively uniform along entire stretch. Inboard toe runs approx. 5 to 10 feet outside of a former levee (natural/man-made?) / berm that ~~sits~~ runs along the top of the deep creek channel.

Between approx. Sta. 36+00 and 53+00, an unimproved bicycle/walking trail runs right along the toe of the inboard levee slope.

Sta. 58+30 — A collection of utility/well boxes is located along inboard toe of levee slope. Markings ~~[illegible]~~ indicate they may be related to a recycled water system owned by SCVWD.

☐ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

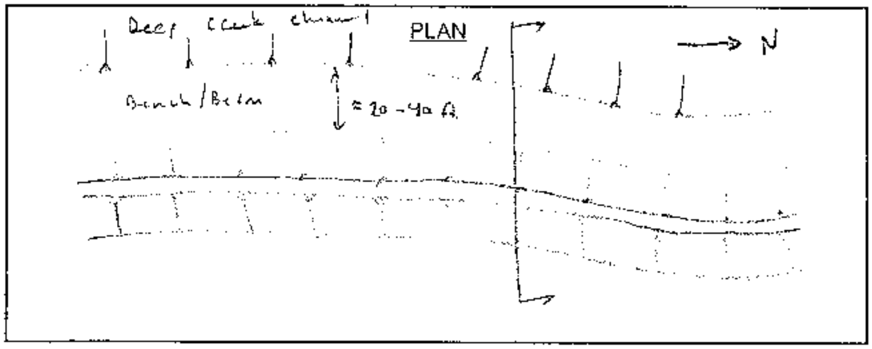
Low flow in deep creek channel.

☐ Continued at end of report

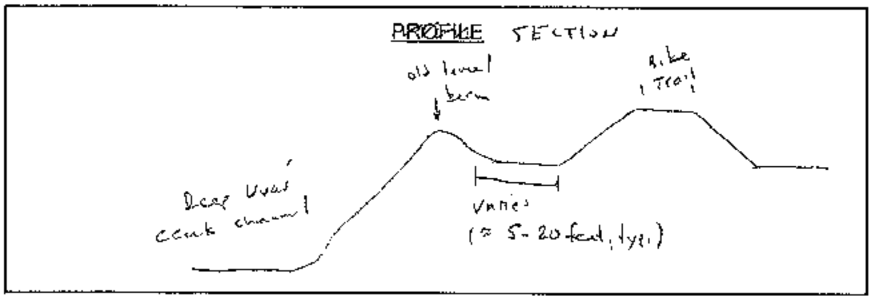
PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 4

Station Interval		Other Reach/Location ID
From: 36+00	To: 59+00	

SKETCHES



NOTES



SECTION

OBSERVATIONS

Check and indicate severity of all that apply:

			Slight	Moderate	Severe
	☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
a)	☒	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☒	☐	☐
b)	☒	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☒	☐	☐
	☐	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐	☐	☐
c)	☒	**Encroachments by vegetation or other improvements** (overhead water line?)	☒ →	☒	☐
	☐	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☐	☐	☐
	☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
	☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐	☐	☐
	☐	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☐	☐	☐
	☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
d)	☒	**Animal burrows**	☐	☐ X	☐

Further describe the location, extent and nature of checked items:

a) Erosion

1) Trail along toe of inboard levee slope appears to have caused some erosion and oversteepening of the toe in some areas. Particularly, near stations 38-40 and 47 to 50. Trail also is unvegetated which may promote erosion along toe during high flow periods.

b) Stability

~~[illegible]~~ Toe of inboard levee slope is typically offset from ~~steep creek~~ deep channel by ≈ 20-40 ft. However, in some areas, ~~th~~ actual channel slopes are very steep. Notably, ~~near~~ between stations 36+00 and 40+00

☒ Continued at end of report

PROJECT NUMBER: 13815.001.0 Sta. 36+00 to 59+00 **PAGE** 3 **OF** 4

DESCRIPTIONS AND OBSERVATIONS, CONTINUED

Observations, Cont.

b) Stability, continued – Also steep banks between 43+00 and 48+00.

c) vegetation encroachment

Occasional encroachment of trees onto lower ~~slope~~ inboard and outboard slopes. Notably, at the following locations:

Inboard	Outboard
39+00	~~[illegible]~~ 53+00 – 54+00
42+50 – 44+00	58+50
46+50 – 52+00	
53+00 – 54+00	
56+00 – 58+00	

d) Overall, animal burrows are moderate, but in some areas are moderate to severe. Mostly gopher activity, but some larger ground squirrel holes.

PROJECT NUMBER: 13815.001.0 **PAGE** 4 **OF** 4

Station Interval		Other Reach/Location ID
From: 36+00	To: 59+00	

PHOTOS

Photo ID	Location	Description
84	38+00	Disturbance/Erosion at inboard toe (from trail)
85	47+00	" " " " " " "
86	50+50	Large burrow near inboard toe
87-~~88~~ 90	58+30	Recycled Water (?) ~~70k~~ - related utilities
91 - 94	36+00	North/South views of inboard/outboard slopes
95 - 96	38+00	Steep bank slopes near sta 38+00 ≈ 30' from inboard toe.
97-98	45+00	Steep bank slopes ≈ 30' from inboard toe
99-102	45+50	North/South views of inboard/outboard slopes
103-106	53+00	North/South views of inboard/outboard slopes
107-119	58+00	North/South views of inboard/outboard slopes

SURVEY POINTS

Point ID	Location	Description
18	58+30	
19	58+30	screwed wells/boxes
20	58+30	
21	58+30	
22	58+30	cathodic protection test well
23	58+30	electrical box - unknown utility

Recycled water Line? boxes are [illegible] [illegible]

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 5

Project Name: Uvas Creek Levee Recertification

Date: 5/23/08

Project Number: 13815.001.0

Weather Conditions: Sunny, Mild, ≈ 75°

Location: Gilroy, CA

Observations Recorded by: D. Ritzman

Station Interval		Other Reach/Location ID
From: 59+00	To: 70+00 (Miller Ave.)	

LEVEE DESCRIPTION

Geometry and Configuration:

Means of Measurement/Estimation

Height above Outboard Toe:	8 - 10 ft	☒ Visual	☐ Rod and Hand Level		☐ Other
Crest Width:	16 ft	☐ Visual	☐ Pace	☒ Tape	☐ Other
Inboard Slope:	10 - 15 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other
Outboard Slope:	26 - 30 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other

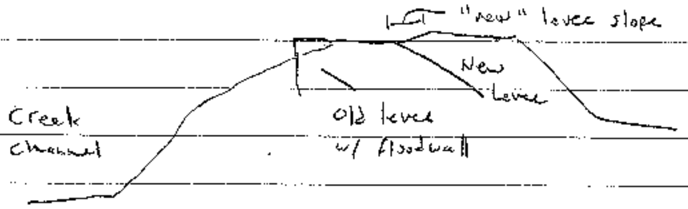
☐ Erosion Protection	Type:	Location:	Condition:
☒ Penetrations	Type: Abandoned outfall (?) water (Irrigation Line)	Location: 59+00, 69+40	Condition:
☒ Floodwall	Type: wood post and lagging	Location: 58+00 - 68+00	Condition: Abandoned
☐ Other Structures	Type:	Location:	Condition:
☒ Utilities	water meter box on outboard slope	69+60	

Ground Cover:

	Inboard Slope	Outboard Slope	Crest	Comments
Bare Ground	☐	☒	☐	
Grass	☒	☒	☐	
Shrubs	☒ At toe of "new" levee	☒ at toe, between 59+00 and 61+00 and 64+00 to 69+00	☐	
Trees	☒	☒	☐	
Riprap	☐	☐	☐	
Gravel	☐	☐	☐	
Pavement	☐	☐	☒ A/C	Bicycle Trail
Other	☐	☐	☐	

Additional Explanation/Notes:

In this reach, the levee appears to be constructed on top of the outboard slope of a previous levee/embankment. The "new" inboard slope is typically less than 5 ft. high. At the base of the new slope, there is usually a 10-20 ft. wide bench ~~on grade~~ or gentle slope followed by another slope to the creek channel.



☒ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

low flow in bottom of active creek channel - active channel is relatively wide with relatively gentle slopes in this reach.

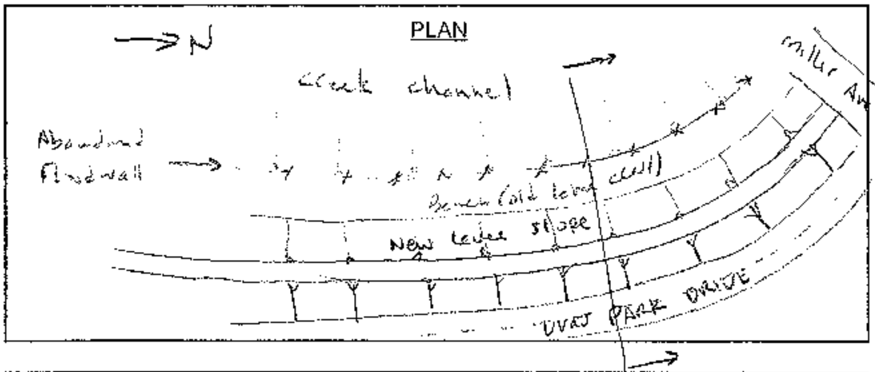
☐ Continued at end of report

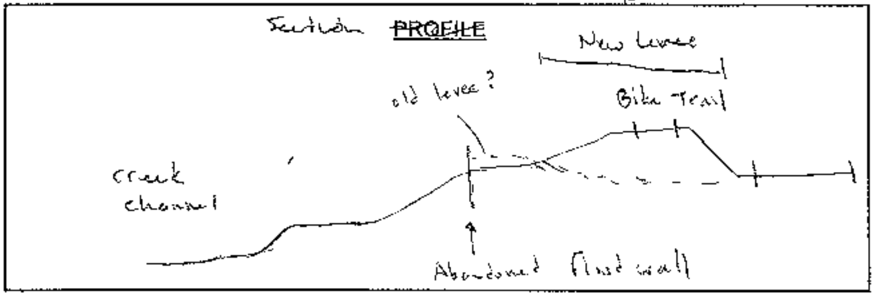
PROJECT NUMBER: 13815.001.0

PAGE 2 **OF** 5

Station Interval	Other Reach/Location ID
From: 59+00 To: 70+00	

SKETCHES





NOTES

SECTION

OBSERVATIONS

Check and indicate severity of all that apply:

			Slight	Moderate	Severe
	☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
a)	☒	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☒	☐	☐
b)	☒	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☒	☐	☐
c)	☒	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☒	☐	☐
d)	☒	**Encroachments by vegetation or other improvements** (Uvas Park Drive)	☐ X	☐	☐
	☐	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☐	☐	☐
	☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
	☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐	☐	☐
	☐	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☐	☐	☐
	☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
e)	☒	**Animal burrows**	☐	☒	☐

Further describe the location, extent and nature of checked items:

a) erosion

Outboard Toe, Stations 60-64 is located adjacent to shoulder of Uvas Park Drive. It appears that the toe is somewhat oversteepened and bare, which may be related to erosion at the base of the slope. Slope also may ~~also~~ be oversteepened due to roadway encroachment.

b) See (a). Outboard slope along Uvas park drive is relatively steep (2:1 or steeper). See also (b) on sheet 4.

☒ Continued at end of report

DESCRIPTIONS AND OBSERVATIONS, CONTINUED

DESCRIPTION, CONT.

Observed abandoned floodwall, mostly collapsed, between ≈ Stations 58 and 68. Post and lagging (wood) wall is decayed and collapsed in most areas. Wall is located ≈ 10' to 20' from toe of "new" inboard levee slope. It looks like the wall was originally up to approx. 4 ft. high.

Sta. 59+00 Noted a concrete-sack apron on the bank below the old floodwall, but no culvert or obvious penetration. ~~have been~~ May be an abandoned penetration?

Utilities – Note water meter box with what looks like an irrigation line running underneath the crest of the levee at ≈ Station 69+30. Not clear where water line might go.

OBSERVATIONS, Continued

c) some longitudinal cracking in center of trail pavement near Miller Avenue crossing, (Sta. 69 - Sta. 70) and above Uvas Park Drive (Sta. 60-64).

d) See (a) - Road encroachment on outboard toe Sta. 60+00 - 64+00.

Also, tree encroachment on "new" levee slopes at the following locations (note "old" levee crest and inboard slope near abandoned floodwall supports abundant trees and brush):

Inboard Slope	Outboard Slope
60+50 - 62+00	59+60 - 60+40
	64+00 - 69+00

e) Burrow density is moderate. Vegetation generally low enough (mowed) to identify burrow activity. Mostly gopher-size holes, but some ground squirrel burrows. Note very large burrow in "old" inboard levee slope at ≈ Sta. 62+50.

DESCRIPTIONS AND OBSERVATIONS, CONTINUED

b) Stability of inboard slope –

Decaying floodwall has left a relatively steep, approx. 4- to 6-foot-high slope along the top of the creek bank approximately 10 to 20 feet inside the toe of the "new" levee slope. This may represent a localized instability issue. However, the new levee slopes are relatively shallow (≤ 10°-15°). This, combined with the existing bench between the new levee slope and the floodwall and the overall relatively shallow slopes of the creek channel in this area significantly reduces the potential for global instability of the inboard levee slope.

The "new" levee fill in this area appears to overlie old levee fill. As part of stability evaluation, should try to evaluate properties of old levee fill materials for suitability as foundation material. This may affect stability of the levee slopes, as well. (Check extent of old fill materials, too.)

PROJECT NUMBER: 13815.001.0 **PAGE** 5 **OF** 5

Station Interval	Other Reach/Location ID
From: 59+00 To: 70+00	

PHOTOS

Photo ID	Location	Description
111	58+00	Old (abandoned) flood wall
112-113	59+00	~~old~~ Abandoned Floodwall
114	59+00	Concrete sack apron - no culvert (maybe abandoned)
115-116	60+00	Abandoned floodwall
117-118	62+50	Major Burrow on inboard slope of old levee.
119	67+00	Abandoned floodwall
120, 121	60+50, 62+00	Outboard toe - erosion/oversteepening adjacent to roadway shoulder
122, 123	63+00	" " " " " "
124-127	60+50	North/South views of inboard/outboard slopes
128-131	63+00	" " " "
132-135	69+00	" " " "
136-138	69+40	water meter box and irrigation line under crest of levee.

SURVEY POINTS

Point ID	Location	Description
24	69+40	Water meter box on outboard slope near Miller Ave.

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 4

Project Name: Uvas Creek Levee Recertification
Date: 5/27/08
Project Number: 13815.001.0
Weather Conditions: Ptly. Cloudy, Mild ≈ 75°
Location: Gilroy, CA
Observations Recorded by: D. Ritzman

Station Interval
From: 70+00 To: 83+00

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration:

			Means of Measurement/Estimation		
Height above Outboard Toe:	7-10 ft	☒ Visual	☐ Rod and Hand Level		☐ Other
Crest Width:	14-16 ft	☐ Visual	☐ Pace	☒ Tape	☐ Other
Inboard Slope:	10-18 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other
Outboard Slope:	20-26 [✓ deg] H:V %	☐ Visual	☒ Brunton Compass		☐ Other

☐ Erosion Protection	Type:	Location:	Condition:
☒ Penetrations	Type: Storm Drain Outfalls 18", 30" cmp	Location: 72+70, 82+00	Condition: good
☐ Floodwall	Type:	Location:	Condition:
☐ Other Structures	Type:	Location:	Condition:
☒ Utilities	water meter + valve boxes	71+40	

Ground Cover:

	Inboard Slope		Outboard Slope		Crest	Comments
Bare Ground	☐		☒		☐	
Grass	☒		☒		☐	
Shrubs	☒	at toe and on slopes	☒	occasional @ toe	☐	
Trees	☒		☐		☐	
Riprap	☐		☐		☐	
Gravel	☐		☐		☐	
Pavement	☐		☐		☒	A/c Bicycle Trail
Other	☐		☐		☐	

Additional Explanation/Notes:

Toe of outboard slope runs along ~~[illegible]~~ shoulder of Uvas Park Drive.
Slope and apparent height of inboard levee slope varies widely. As with the previous reach, this section of levee appears to be constructed over an older levee. Between about stations 70+00 and 80+00, the ~~[illegible]~~ "newer" levee appears to be constructed over the outboard slope of the former levee. Between about stations 80+00 and ~~[illegible]~~ 83+00, the new levee appears to be right over the top of the old levee section.

☒ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

Low flow in creek channel. Channel slopes relatively wide and shallow in this area.

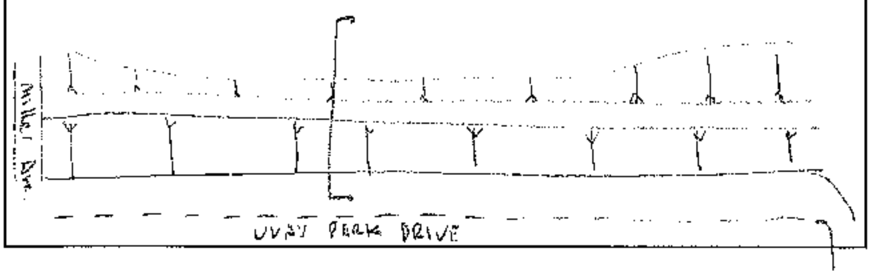
☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 4

Station Interval	Other Reach/Location ID
From: 70+00 To: 83+00	

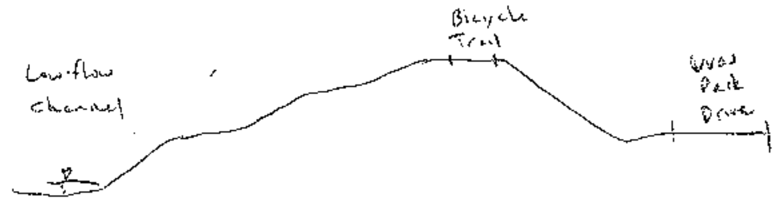
SKETCHES

PLAN



NOTES

~~PROFILE~~ SECTION



SECTION

OBSERVATIONS

Check and indicate severity of all that apply:

			Slight		Moderate	Severe
	☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐		☐	☐
a)	☒	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☒		☐	☐
	☒	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.) –old levee fill?	☒		☐	☐
	☐	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐		☐	☐
b)	☒	**Encroachments by vegetation or other improvements**	☐	✓	☐	☐
	☐	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☒		☐	☐
	☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐		☐	☐
	☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐		☐	☐
c)	☒	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☒		☐	☐
	☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐		☐	☐
d)	☒	**Animal burrows**	☐		☒	☐

Further describe the location, extent and nature of checked items:

a) Appears to be minor erosion potential along the outboard levee toe adjacent to the shoulder of Uvas Park Drive. Toe is unvegetated bare ground in some areas.

b) Trees growing on inboard levee slope [illegible] between [illegible] stations 79+00 and 83+00. Judging from size [illegible] and maturity of the trees, it [illegible] appears they are growing in the slope of the older levee.

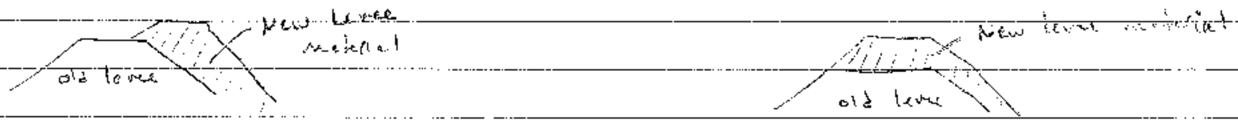
c) 18" cmp [illegible] outfall at Sta. 72+70 partially clogged with debris
Need to follow up on nature/condition of 30" cmp outfall's inlet point.

☒ Continued at end of report

DESCRIPTIONS AND OBSERVATIONS, CONTINUED

Description, Continued

70+00 – 80+00 80+00 – 83+00



apparent configuration of old/new levee materials

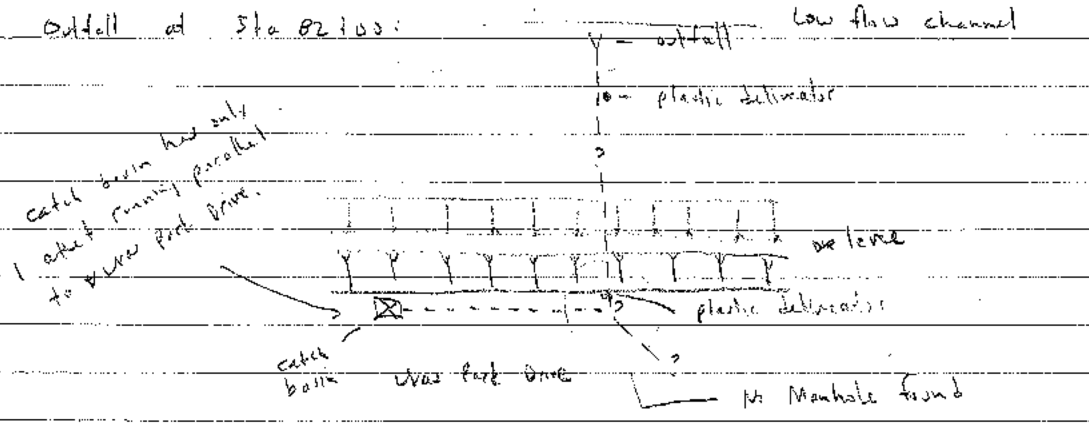
Overall, inboard levee slopes are relatively gentle and set back relatively far from the low-flow creek channel. The maximum inboard slope and height was observed between stations 81+00 and 83+00, where they are about 10 feet and 18 degrees, respectively.

Noted two storm drain outfalls:

Station 72+70: 18" CMP from catch basin on shoulder of Uvas Park Drive to Manhole on outboard levee slope to outfall in low flow channel (near current water level in creek). No backflow prevention device observed - maybe in Manhole? ~~Stak~~ Outfall ~~shaft~~ moderately obstructed by leaves and soil.

Station 82+00: 30" CMP appears connected to catch basin on shoulder of Uvas Park drive, but not directly. Could not find a manhole opposite levee from the outfall ~~althod~~ although location of buried CMP may be marked by a white plastic delineator. No backflow prevention observed.

Outfall at Sta 82+00:



OBSERVATIONS, Cont.

d) Burrow activity is moderate, similar level as observed on previous reaches. Mostly smaller gopher activity but some large ground squirrel holes noted near toe of ~~inbrd~~ inboard, ~~Many~~ "older levee" slope. Major burrow ≈ 10' inboard of crest at Sta 78+50.

PROJECT NUMBER: 13815.001.0 **PAGE** 4 **OF** 4

Station Interval		Other Reach/Location ID
From: 70+00	To: 83+00	

PHOTOS

Photo ID	Location	Description
~~[illegible]~~ 139	72+70	storm drain outfall (18" cmp)
140	72+70	outfall marker
~~[illegible]~~ 141, 142	72+70	Storm drain manhole
~~[illegible]~~ 143	72+70	Catch basin
~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
144, 145	~82+00	Storm drain outfall (30" cmp)
146, 147	80+90	Storm drain catch basin
148, 149	78+50	Large borrow ≈ 10' inboard from crest.
150, 151	70+70	Miller Avenue Crossing
152, 153	70+00	Miller Avenue Crossing
154, 155	70+70	North view of ~~outboard~~/inboard/outboard slopes
156-159	76+00	N/S views of inboard/outboard slopes
160, 161	80+00	Unvegetated lower outboard slope along [illegible] Park Drive (N/S)
162-165	81+00	N/S views of inboard/outboard slopes
166	82+00	Trees growing on inboard slope

SURVEY POINTS

Point ID	Location	Description
~~[illegible]~~ 25	72+70	Storm drain outfall (18" cmp)
26	72+70	Storm drain manhole
27	72+70	Storm drain catch basin
28	71+90	water box/utility
29	71+30	water meter box
30	82+00	Storm Drain outfall (30" cmp)
31	80+90	Storm drain catch basin

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 4

Project Name: Uvas Creek Levee Recertification
Date: 5/27/08
Project Number: 13815.001.0
Weather Conditions: Partly Cloudy, mild, ≈ 75°
Location: Gilroy, CA
Observations Recorded by: D. Ritzman

Station Interval
From: 83+00 To: 101+00

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration:

Means of Measurement/Estimation

☆ Height above Outboard Toe: 2 - 7 ft ☒ Visual ☐ Rod and Hand Level ☐ Other
Crest Width: 14 - 16 ft ☐ Visual ☐ Pace ☒ Tape ☐ Other
☆ Inboard Slope: 15 - 20 [✓ deg] H:V % ☐ Visual ☒ Brunton Compass ☐ Other
☆ Outboard Slope: 20 - 25 [✓ deg] H:V % ☐ Visual ☒ Brunton Compass ☐ Other

☆ For "built-up" levee section. See notes.

☐ Erosion Protection Type: Location: Condition:
☒ Penetrations Type: 24" CMP Storm Drain Location: 95+00 Condition: okay
☐ Floodwall Type: Location: Condition:
☐ Other Structures Type: Location: Condition:
☒ Utilities Sanitary sewer 50-100' outside outboard toe

Ground Cover:

	Inboard Slope	Outboard Slope	Crest	Comments
Bare Ground	☐	☒ Tilled	☐	
Grass	☒	☒	☐	
Shrubs	☒	☒ } along toe	☐	
Trees	☒	☒ } along toe	☐	
Riprap	☐	☐	☐	
Gravel	☐	☐	☐	
Pavement	☐	☐	☒ A/C	Bicycle Trail
Other	☐	☐	☐	

Additional Explanation/Notes:

The creek channel along this reach is a relatively wide and flat floodplain with ~~[illegible]~~ shallow to moderately steep banks along the high-flow channel. The low-flow channel is located ~~over~~ several hundred feet west of the east bank, along which the levee is located.

Inboard slope - The inboard slope generally runs about 10 to 50 feet outside the high-flow bank, with the exception of an area between

☒ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

Low flow in bottom of low-flow channel, several hundred feet west of bank. Channel in this area is a ~~[illegible]~~ broad floodplain with relatively shallow to moderately steep ~~[illegible]~~ banks.

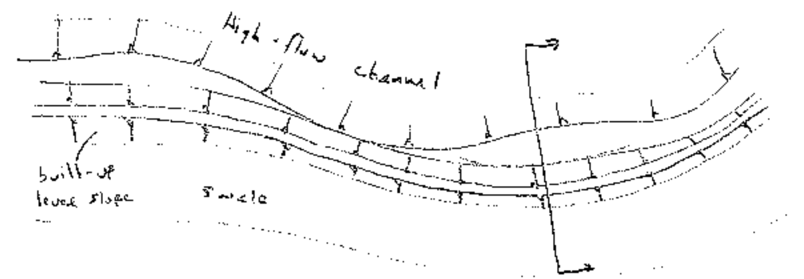
☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 4

Station Interval	Other Reach/Location ID
From: 83+00 To: 101+00	

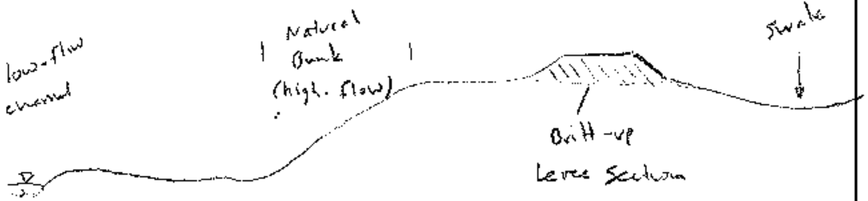
SKETCHES

PLAN



NOTES

~~PROFILE~~ Section



SECTION

OBSERVATIONS

Check and indicate severity of all that apply:

			Slight	Moderate	Severe
	☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
a)	☒	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☒	☐	☐
a)	☒	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☒	☐	☐
	☐	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐	☐	☐
b)	☒	**Encroachments by vegetation or other improvements** – Vegetation on inboard slope/bank	☐ ×	☐	☐
	☐	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☐	☐	☐
	☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
	☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.).	☐	☐	☐
	☒	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☐ ×	☐	☐
	☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
c)	☒	**Animal burrows**	☐	☒	☐

Further describe the location, extent and nature of checked items:

a) Between approximately Stations 88+00 and 95+00, the toe of the inboard levee slope is relatively near (or coincident) with the natural bank of the high-flow channel. The combined levee/bank slope appears to be about 20-25 ft. high in some places.

b) Trees and shrubs are relatively common along the inboard toe of built-up slope and natural high-flow bank. Some encroachment by trees on outboard slope between Stations 83+00 and 84+00 and at Station 96+50.

c) Moderate burrow activity along both sides of levee.

☐ Continued at end of report

83+00 – 101+00

PROJECT NUMBER: 13815.001.0 **PAGE** 3 **OF** 4

DESCRIPTIONS AND OBSERVATIONS, CONTINUED

DESCRIPTION, Continued

approximately Stations 88+00 and 95+00, where the inboard toe of the levee is very near the top of the bank. The approximately 20- to 25-foot-high bank slope near Station 91+00 is approximately 22 degrees.

Outboard Slope – The outboard levee slope includes a "built-up" section over a relatively shallow slope that continues downward to the bottom of a broad, shallow swale that runs along the outboard side of the levee. The height of the levee above the bottom of the swale is generally between about 4 and 10 feet. The height of the "built-up" levee section ranges from about 2 to 7 feet. The swale area has been tilled. (presumably for fire prevention/control)

Utilities: a sanitary sewer line (marked by a series of manholes) runs through the swale roughly parallel to and about 50 to 100 ft from the built-up levee section.

Storm drain: One storm drain outfall was observed at about Station 95+00. The outfall is a 24" ~~ϕ~~ diam. CMP. No inlet point (manhole / catch basin) was found. There was no flap gate on the outfall and no other means of backflow prevention was observed.

Catch Basin: observed a catch basin in the unpaved parking area on the outboard side of the levee ~~and~~ near Station 83+00. This basin may drain to the outfall at 82+00, but does not appear to do so directly. (See discussion for reach 70+00 to 83+00)

PROJECT NUMBER: 13815.001.0 **PAGE** 4 **OF** 4

Station Interval		Other Reach/Location ID
From: 83+00	To: 101+00	

PHOTOS

Photo ID	Location	Description
167-169	95+00	Storm drain outlet (24" cmp)
170, 171	95+00	SS manhole
172-175	84+00	N/S views of inboard/outboard slopes
176-179	87+00	" " " "
180	91+00	moderately / steep bank slope next to levee
181-184	~~83+00~~ 91+80	N/S views of inboard / outboard slopes
185-188	95+00	" " " "
189-192	97+50	" " " "
193-196	100+00	" " " "

SURVEY POINTS

Point ID	Location	Description
32	95+00	Storm drain outfall (24" cmp)
33	95+00	Sanitary Sewer Manhole
34, 35, 36, 37, 38	83+00 - 101+00	SS manholes
39	83+00	Catch basin (sd)

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 4

Project Name: Uvas Creek Levee Recertification
Date: 5/27/08
Project Number: 13815.001.0
Weather Conditions: Partly Cloudy, Mild
Location: Gilroy, CA
Observations Recorded by: D. Ritzman

Station Interval
From: 101+00 To: 108+00

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration:

				Means of Measurement/Estimation		
Height above Outboard Toe:	0 - 2 ft	☒ Visual	☐ Rod and Hand Level		☐ Other	
Crest Width:	14-16 ft	☐ Visual	☐ Pace	☒ Tape	☐ Other	
Inboard Slope:	5-15 [✓ deg] H:V %	☒ Visual	☐ Brunton Compass		☐ Other	
Outboard Slope:	10 - 20 [✓ deg] H:V %	☒ Visual	☐ Brunton Compass		☐ Other	

☐ Erosion Protection	Type:	Location:	Condition:
☐ Penetrations	Type:	Location:	Condition:
☐ Floodwall	Type:	Location:	Condition:
☐ Other Structures	Type:	Location:	Condition:

Ground Cover:

	Inboard Slope – and streambank	**Outboard Slope**	**Crest**	**Comments**
Bare Ground	☐	☐	☐	
Grass	☒	☒	☐	
Shrubs	☒	☐	☐	
Trees	☒	☒ occasional at toe	☐	
Riprap	☐	☐	☐	
Gravel	☐	☐	☐	
Pavement	☐	☐	☒ A/C	Bicycle Trail
Other	☐	☐	☐	

Additional Explanation/Notes:

The levee section in this reach is similar to that observed between Stations 83+00 and 101+00, with a much lower "built-up" levee section. In general, the inboard levee slope is very shallow and blends into what appears to be the crest of the natural high-flow stream-bank slope. The "levee" slope is so low and shallow that it is barely noticeable on the inboard side. On the outboard side, the built-up levee slope is only 0-2 ft. high. The swale is also shallow, ranging from about 5 feet below the top of the levee near station 101+00 to less than a foot or so below

☒ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

Low flow in creek. Low-flow channel is several hundred feet west of levee. Channel in this area is broad w/ relatively shallow to moderately steep slopes.

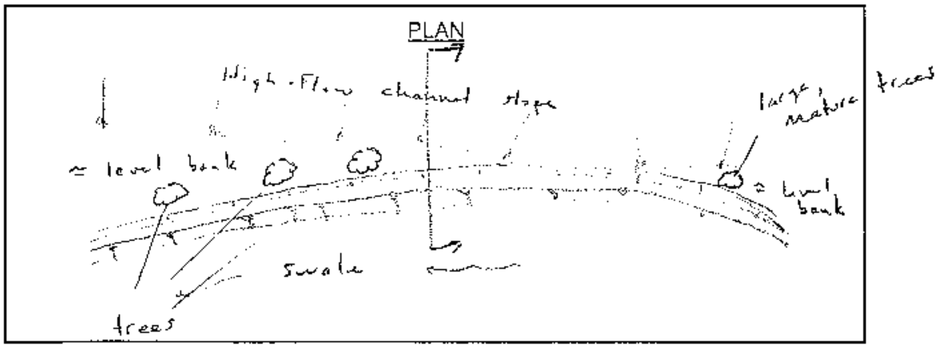
☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 4

Station Interval	Other Reach/Location ID
From: 101+00 To: 108+00	

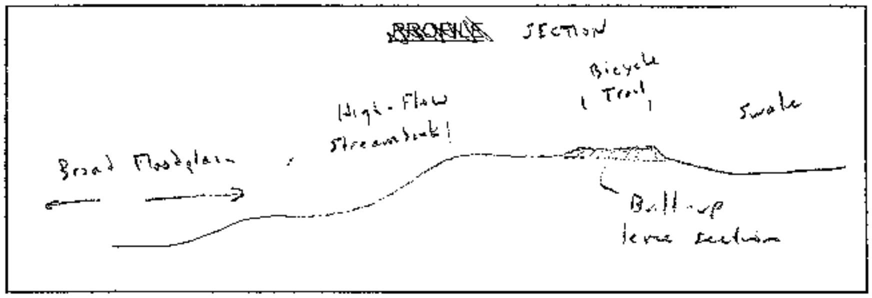
SKETCHES

PLAN



NOTES

~~PROFILE~~ SECTION



SECTION

OBSERVATIONS

Check and indicate severity of all that apply:

			Slight		Moderate	Severe
	☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐		☐	☐
a)	☒	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☐	×	☐	☐
	☐	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☐		☐	☐
	☐	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐		☐	☐
	☐	**Encroachments by vegetation or other improvements**	☐		☐	☐
	☐	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☐		☐	☐
	☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐		☐	☐
	☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐		☐	☐
	☐	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☐		☐	☐
	☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐		☐	☐
b)	☒	**Animal burrows**	☐	×	☐	☐

Further describe the location, extent and nature of checked items:

a) Minor erosion on bank/levee slope near station 106+00, where bare footpath runs down the bank to a trail at the base of the slope.

b) slight to moderate burrow activity on built-up levee slopes. Some areas of major activity w/ large ground squirrel burrows in the streambank slope below the levee.

☐ Continued at end of report

101+00 to 108+00

DESCRIPTIONS AND OBSERVATIONS, CONTINUED

the top of the levee at Station 108+00.

In most places, the relatively flat crest of the high-flow streambank slope ~~is~~ appears to be about 10 to 30 feet wide on the inboard side of the levee, with the exception of a stretch between about Station 105+00 and 106+50. In this area, the streambank slope is within about 10 feet of the inboard levee toe. ~~there~~ However, the streambank slope is not particularly steep and appears to be less than about 15 to 20 feet high in this area, so potential stability issues do not appear to be a major concern.

No utilities or storm drain outfalls were noted along this section of the levee.

PROJECT NUMBER: 13815.001.0 **PAGE** 4 **OF** 4

Station Interval	Other Reach/Location ID
From: 101+00 To: 108+00	

PHOTOS

Photo ID	Location	Description
197-199	105+00	Major ground squirrel burrows in streambank slope
200-203	104+00	N/S views of inboard/outboard slopes
204	104+00	S. view of streambank slope ≈ 30' from inboard toe of levee
205, 206	106+00	Erosion of streambank slope
207	106+50	S. view of streambank slope
208-211	107+00	N/S views of inboard/outboard slopes

SURVEY POINTS

Point ID	Location	Description

GEOMATRIX

LEVEE FIELD RECONNAISSANCE LOG

PAGE 1 OF 3

Project Name: Uvas Creek Levee Recertification
Date: 5/27/08
Project Number: 13815.001.0
Weather Conditions: Partly Cloudy, Mild ≈ 75°
Location: Gilroy, CA
Observations Recorded by: D. Ritzman

Station Interval
From: 108+00 To: 114+00

Other Reach/Location ID

LEVEE DESCRIPTION

Geometry and Configuration: N/A *

Means of Measurement/Estimation

Height above Outboard Toe:	ft	☐ Visual	☐ Rod and Hand Level		☐ Other
Crest Width:	ft	☐ Visual	☐ Pace	☐ Tape	☐ Other
Inboard Slope:	deg H:V %	☐ Visual	☐ Brunton Compass		☐ Other
Outboard Slope:	deg H:V %	☐ Visual	☐ Brunton Compass		☐ Other

☐ Erosion Protection	Type:	Location:	Condition:
☐ Penetrations	Type:	Location:	Condition:
☐ Floodwall	Type:	Location:	Condition:
☐ Other Structures	Type:	Location:	Condition:

Ground Cover:

	Inboard ~~Slope~~ Streambank	Outboard Slope	Crest	Comments
Bare Ground	☐	☐	☐	
Grass	☒	☐	☐	
Shrubs	☒	☐	☐	
Trees	☒	☐	☐	
Riprap	☐	☐	☐	
Gravel	☐	☐	☐	
Pavement	☐	☐	☐	
Other	☐	☐	☐	

Additional Explanation/Notes:

* Levee does not appear to exist in this stretch. Ground surface on outboard and inboard sides of bicycle trail is at about the same elevation or higher than the trail.

☐ Continued at end of report

SURFACE WATER CONDITIONS

Flow conditions and water levels on the inboard side of the levee:

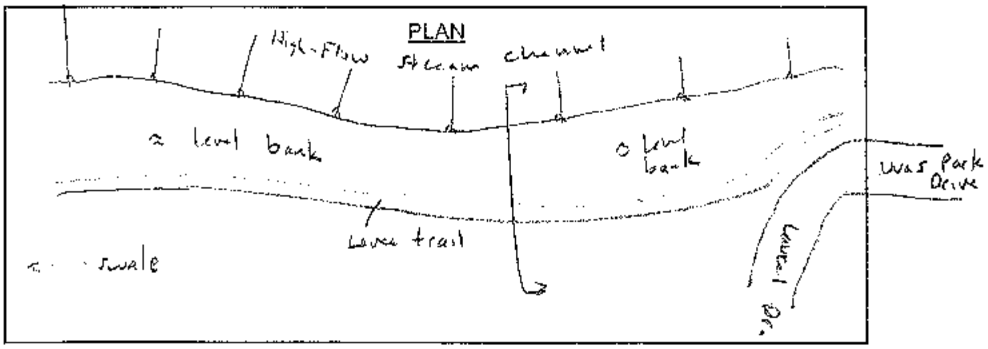
☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 2 **OF** 3

Station Interval	Other Reach/Location ID
From: 108+00 To: 114+00	

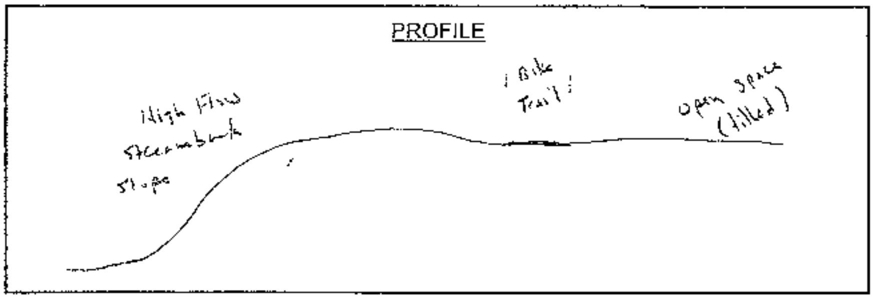
SKETCHES

PLAN



NOTES

PROFILE



SECTION

OBSERVATIONS

Check and indicate severity of all that apply:

		Slight	Moderate	Severe
☐	**Evidence of settlement** (i.e., surface cracks, sinkholes, hummocky/undulating ground)	☐	☐	☐
☐	**Erosion** (rills, gullies, undercutting of levee slopes, scour, etc.)	☐	☐	☐
☐	**Evidence of potential slope stability problems** (as indicated by steep and/or undercut slopes, surface cracks, caving, bulging, slumping, or irregular ground surfaces, etc.)	☐	☐	☐
☐	**Other ground deformation/cracking** (not obviously related to settlement, erosion, or instability)	☐	☐	☐
☐	**Encroachments by vegetation or other improvements**	☐	☐	☐
☐	**Inadequate maintenance** (i.e, mowing/vegetation control, inoperable control structures, etc.)	☐	☐	☐
☐	**Evidence of potential structural problems** (walls, abutments, weirs, aprons, etc.)	☐	☐	☐
☐	**Evidence of seepage** (e.g., wetland-type vegetation, moist or wet ground, springs, boils, etc.)	☐	☐	☐
☐	**Damaged, distressed, and/or blocked closures or interior drainage structures** (including gates, flaps, and/or other devices for backflow control)	☐	☐	☐
☐	**Adverse channel conditions** (i.e., blockages, excessive debris, sand/gravel bars, etc.)	☐	☐	☐
☐	**Animal burrows**	☐	☐	☐

Further describe the location, extent and nature of checked items:

☐ Continued at end of report

PROJECT NUMBER: 13815.001.0 **PAGE** 3 **OF** 3

Station Interval	Other Reach/Location ID
From: 108+00 To: 114+00	

PHOTOS

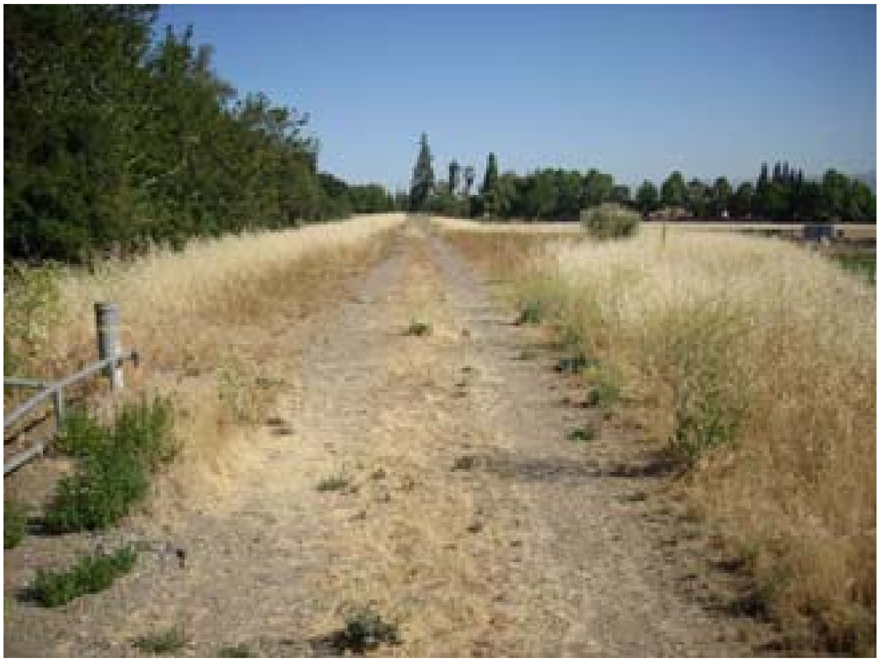
Photo ID	Location	Description
212, 213	109+00	N/S views of trail
214, 215	111+00	" " "
216	113+00	S. view of trail
217	114+00	" " " "

SURVEY POINTS

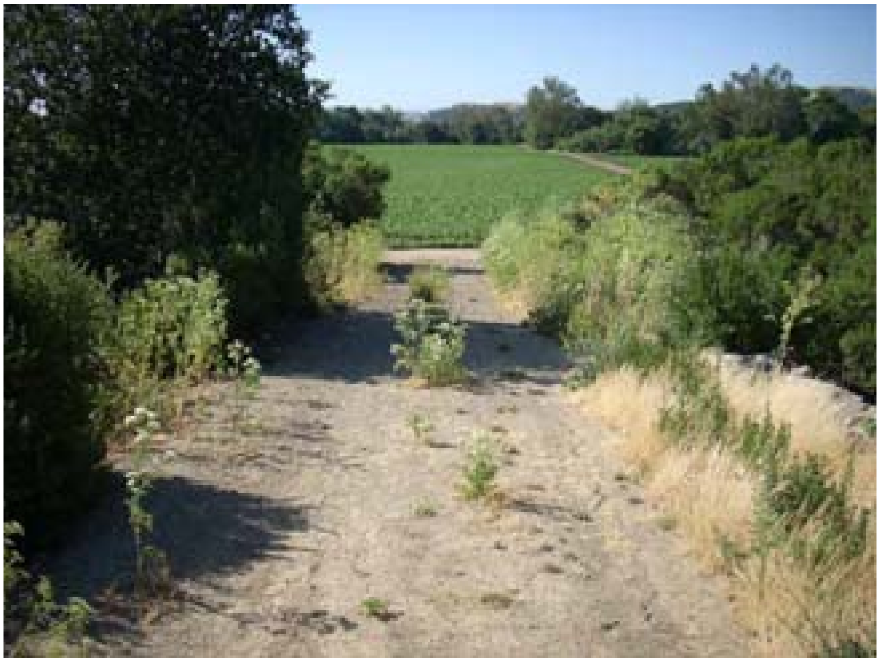
Point ID	Location	Description

ATTACHMENT 2

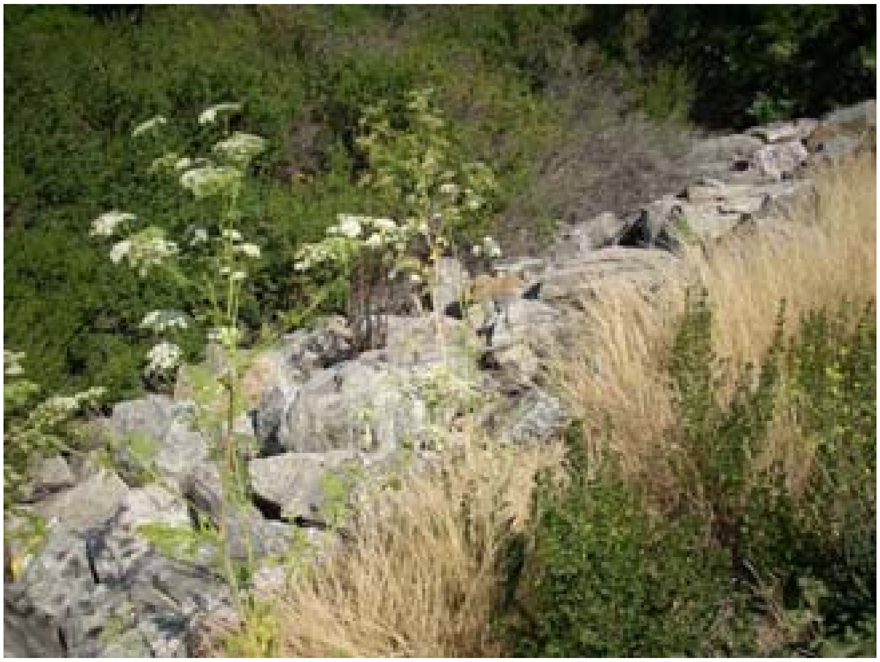
FIELD RECONNAISSANCE PHOTOS



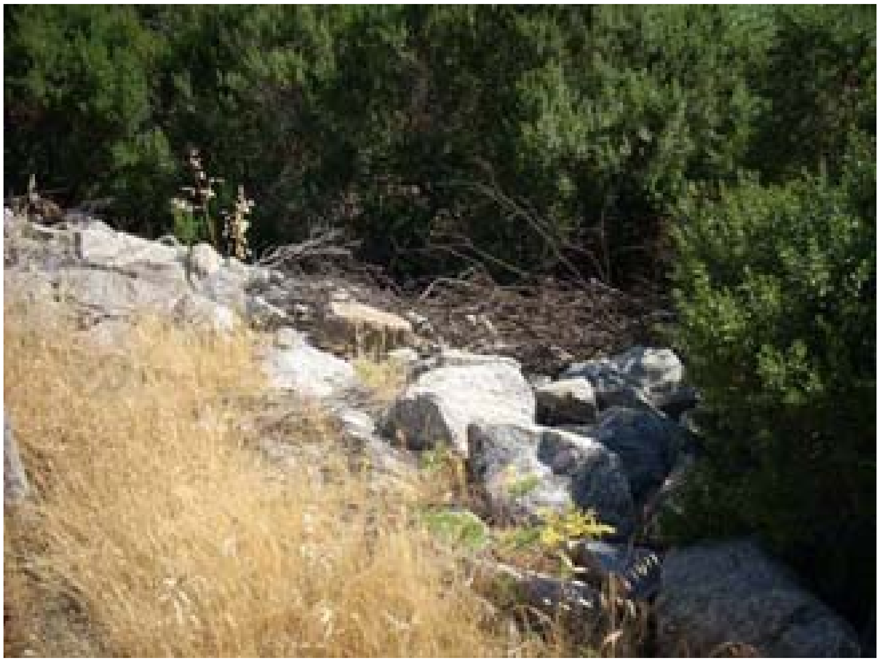
Photograph ID	Approximate Location (Project Station)	Description
001	00+50	North view of levee crest



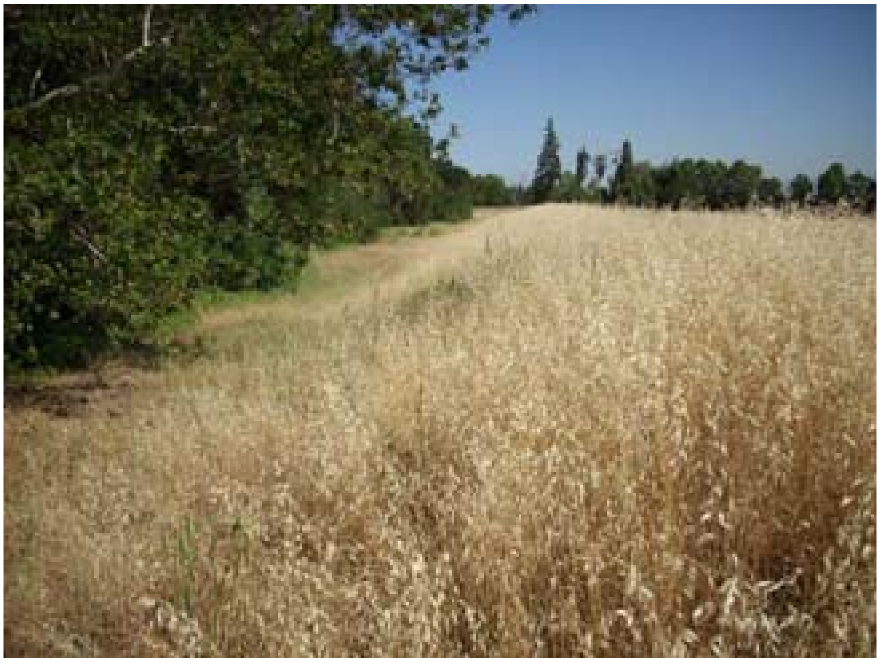
Photograph ID	Approximate Location (Project Station)	Description
002	00+50	South view of levee crest



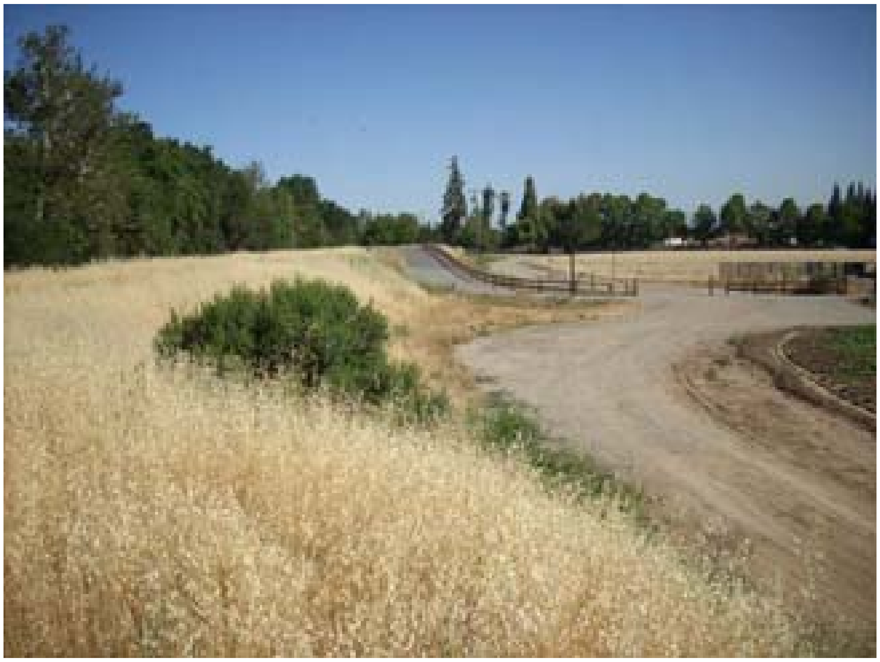
Photograph ID	Approximate Location (Project Station)	Description
003	00+00	Inboard riprap slope



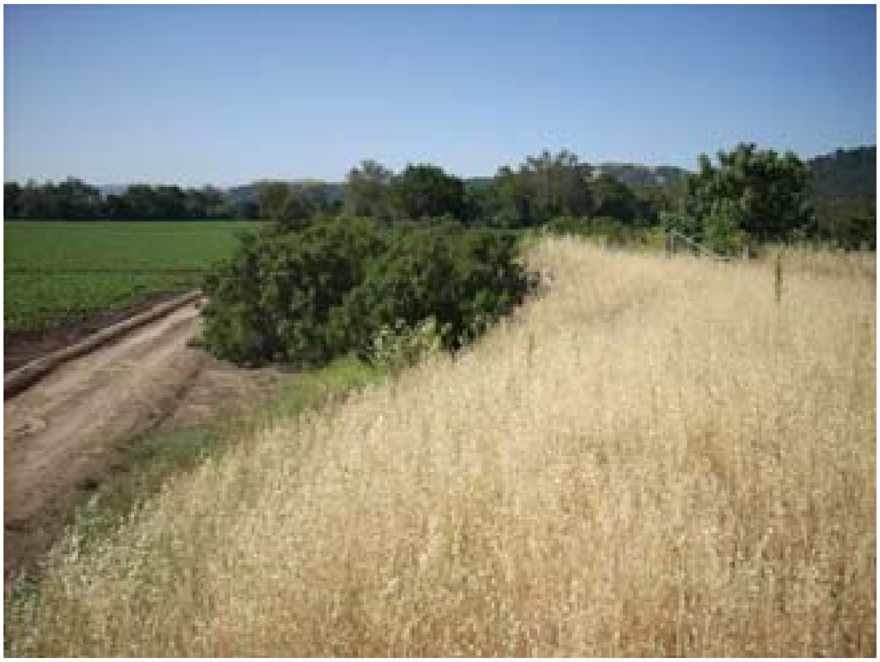
Photograph ID	Approximate Location (Project Station)	Description
004	00+50	Outboard riprap slope



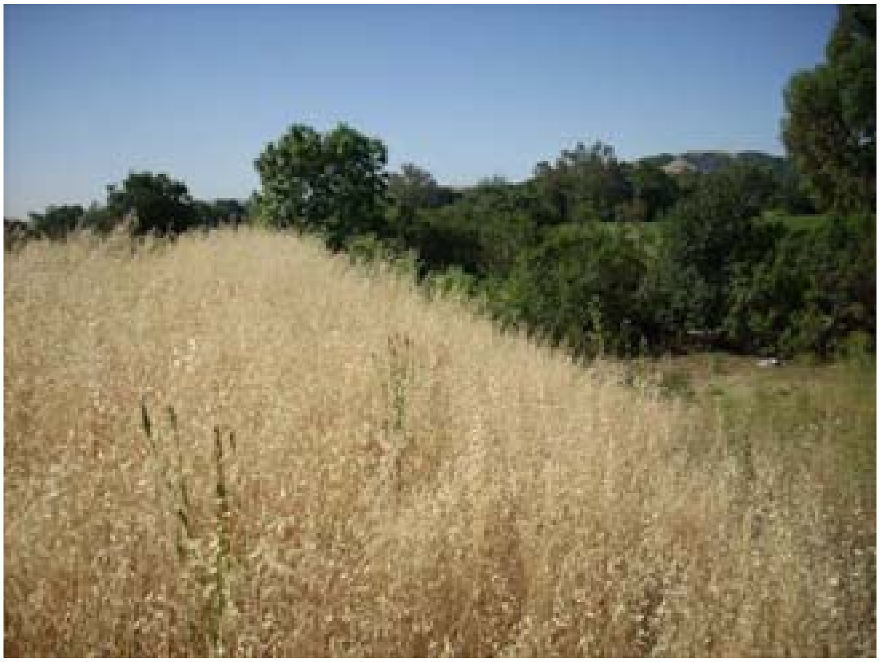
Photograph ID	Approximate Location (Project Station)	Description
005	01+50	North view of inboard levee slope



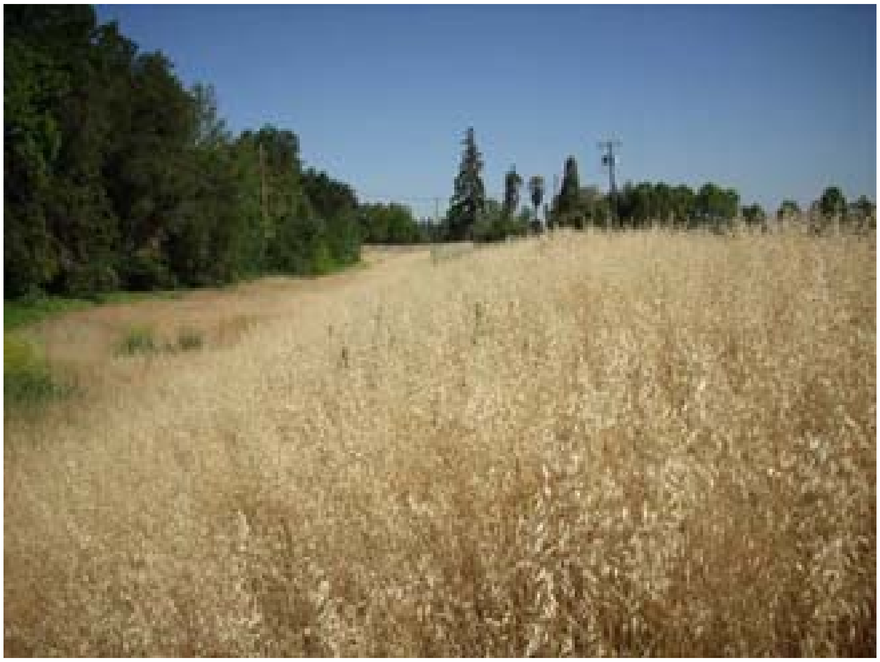
Photograph ID	Approximate Location (Project Station)	Description
006	01+50	North view of outboard levee slope and bicycle path



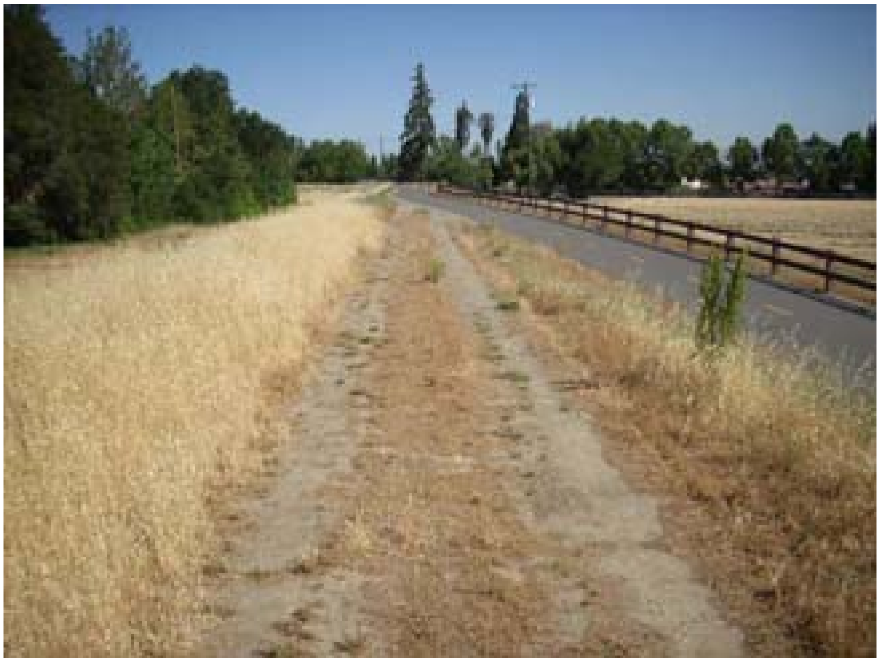
Photograph ID	Approximate Location (Project Station)	Description
007	01+50	South view of outboard levee slope



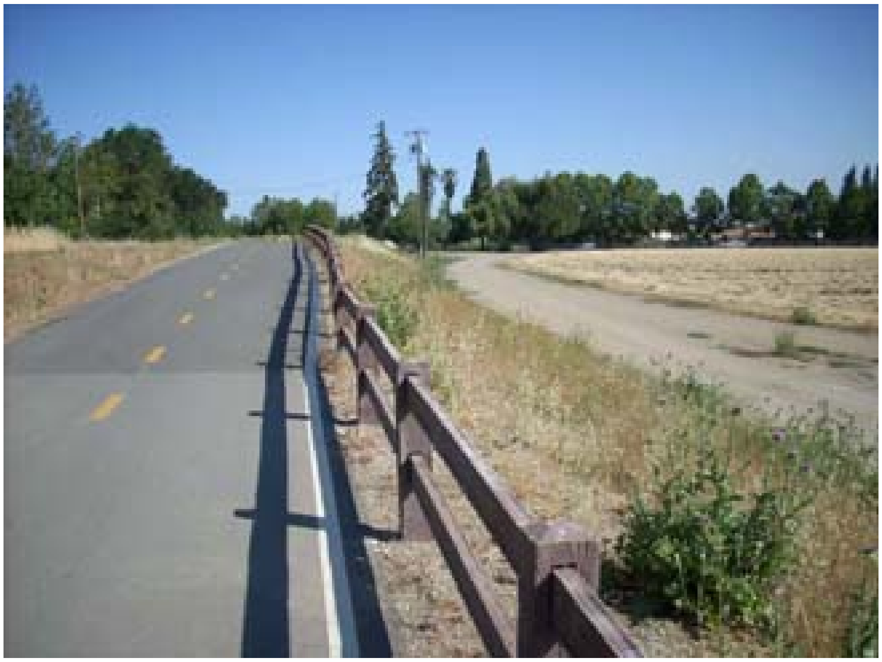
Photograph ID	Approximate Location (Project Station)	Description
008	01+50	South view of inboard levee slope



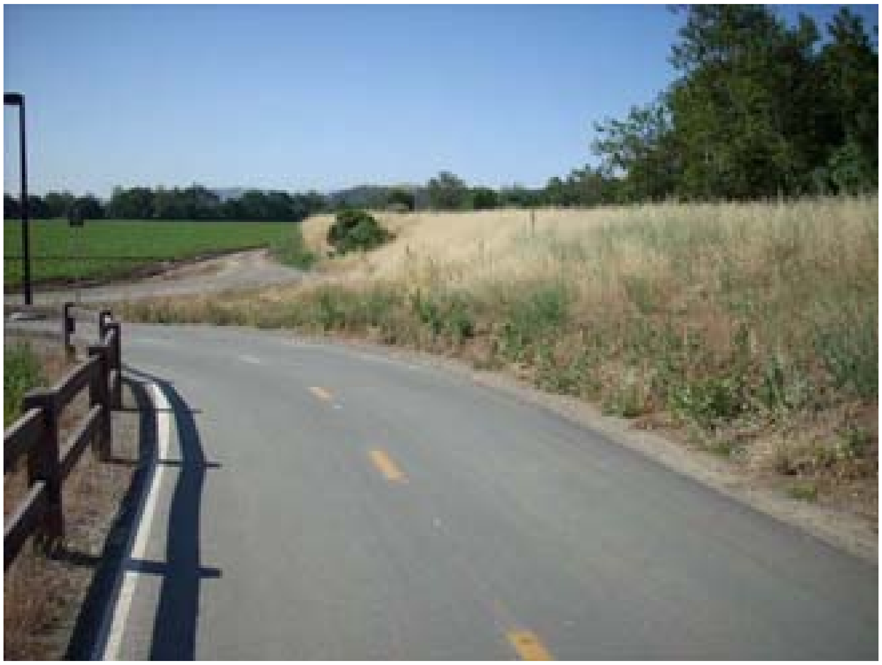
Photograph ID	Approximate Location (Project Station)	Description
009	04+00	North view of inboard levee slope



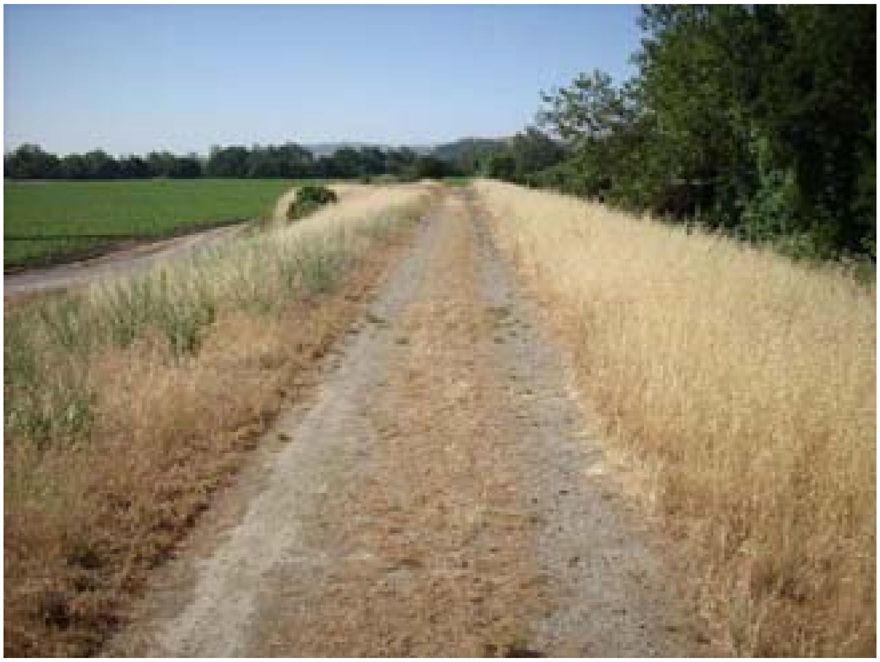
Photograph ID	Approximate Location (Project Station)	Description
010	04+00	North view of levee crest



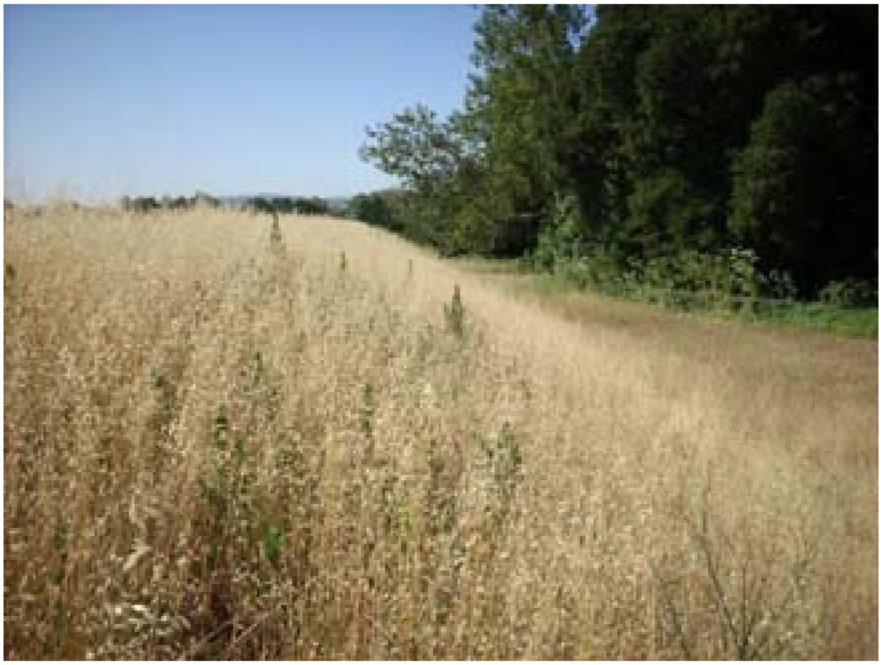
Photograph ID	Approximate Location (Project Station)	Description
011	04+00	North view of outboard levee slope and bicycle trail



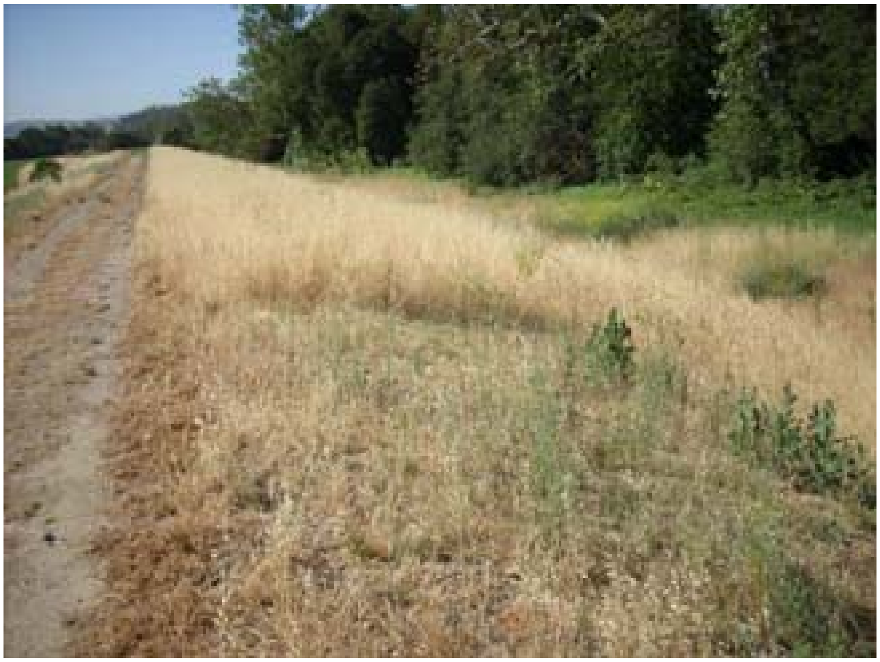
Photograph ID	Approximate Location (Project Station)	Description
012	04+00	South view of outboard levee slope and bicycle trail



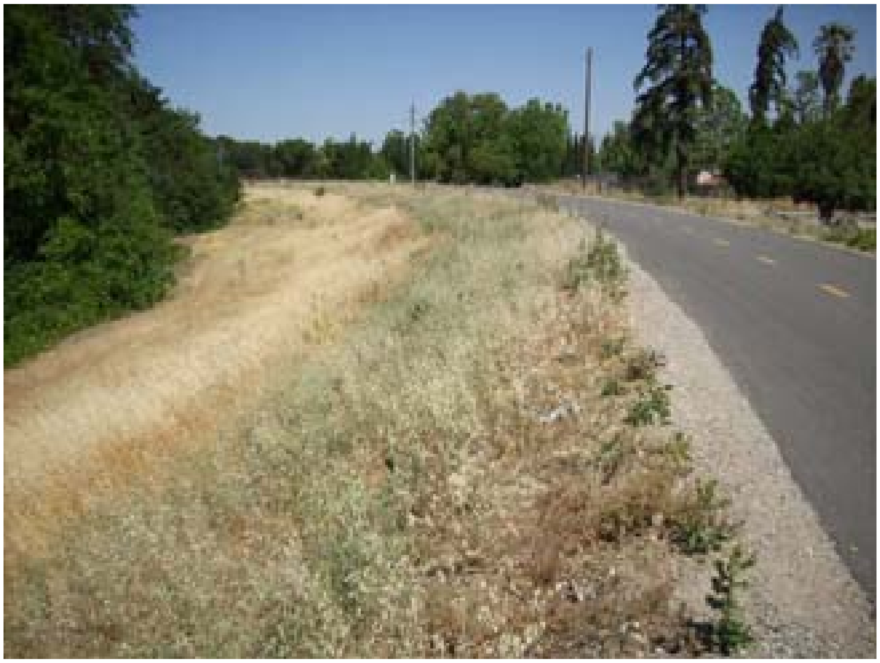
Photograph ID	Approximate Location (Project Station)	Description
013	04+00	South view of levee crest



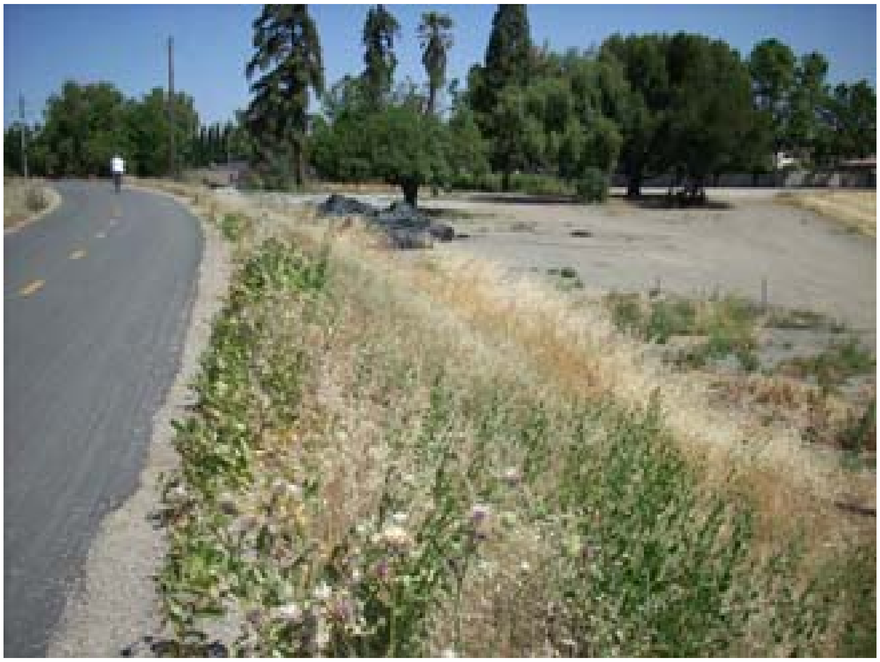
Photograph ID	Approximate Location (Project Station)	Description
014	04+00	South view of inboard levee slope



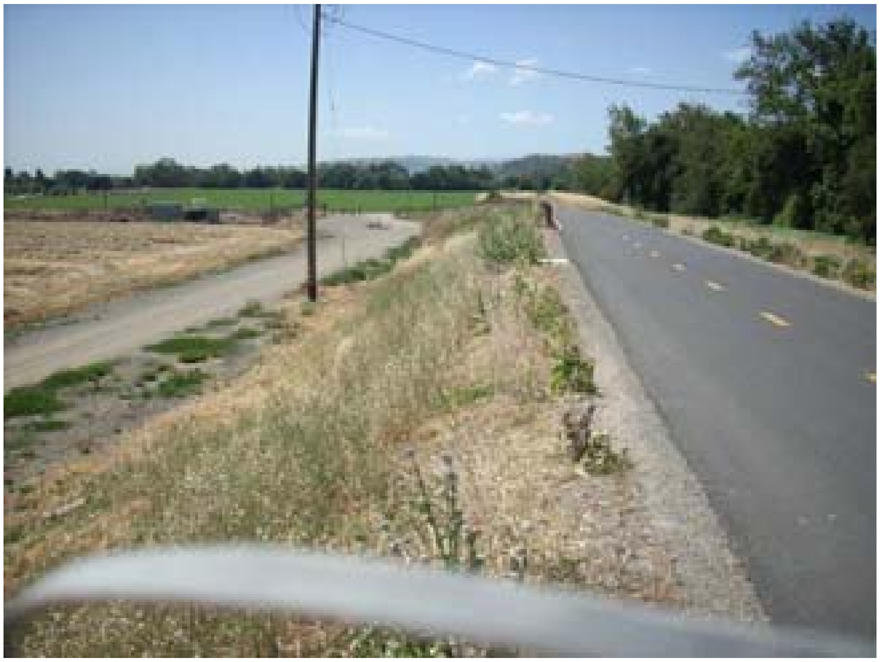
Photograph ID	Approximate Location (Project Station)	Description
015	05+50	South view of inboard levee slope – mowed vs. unmowed grass



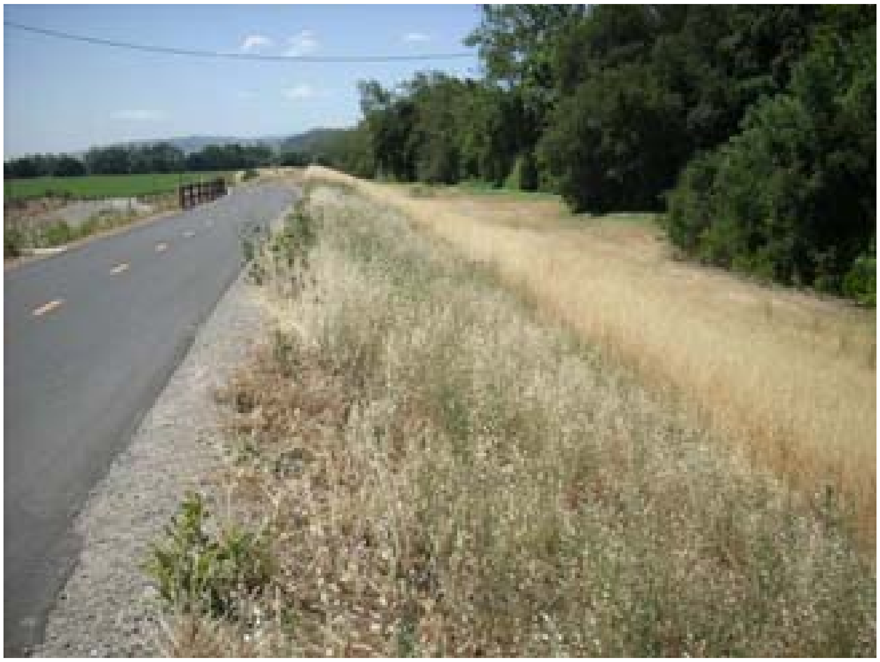
Photograph ID	Approximate Location (Project Station)	Description
016	08+00	North view of inboard levee slope and crest



Photograph ID	Approximate Location (Project Station)	Description
017	08+00	North view of outboard levee slope and crest



Photograph ID	Approximate Location (Project Station)	Description
018	08+00	South view of outboard levee slope and crest

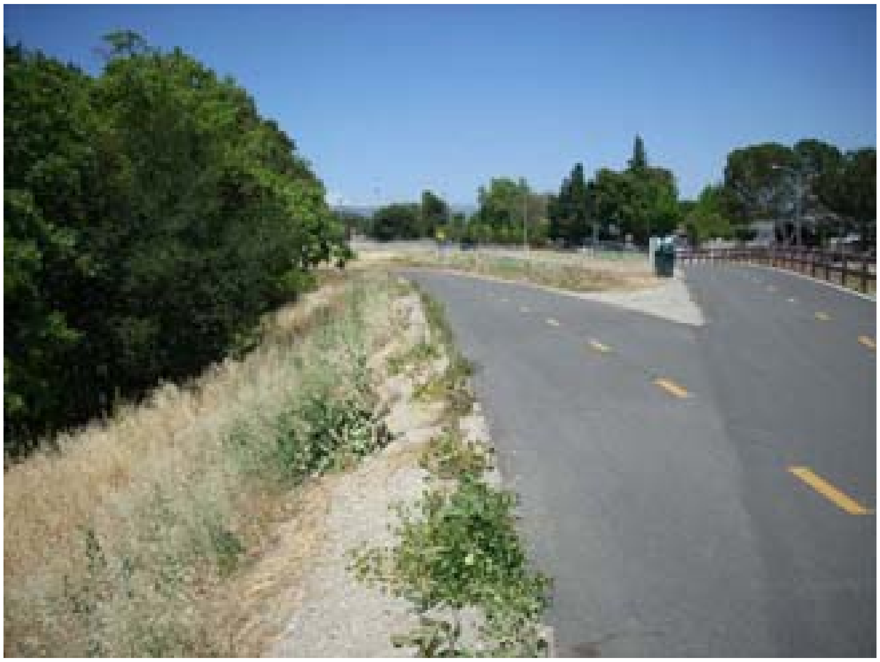


Photograph ID	Approximate Location (Project Station)	Description
019	08+00	South view of inboard levee slope and crest

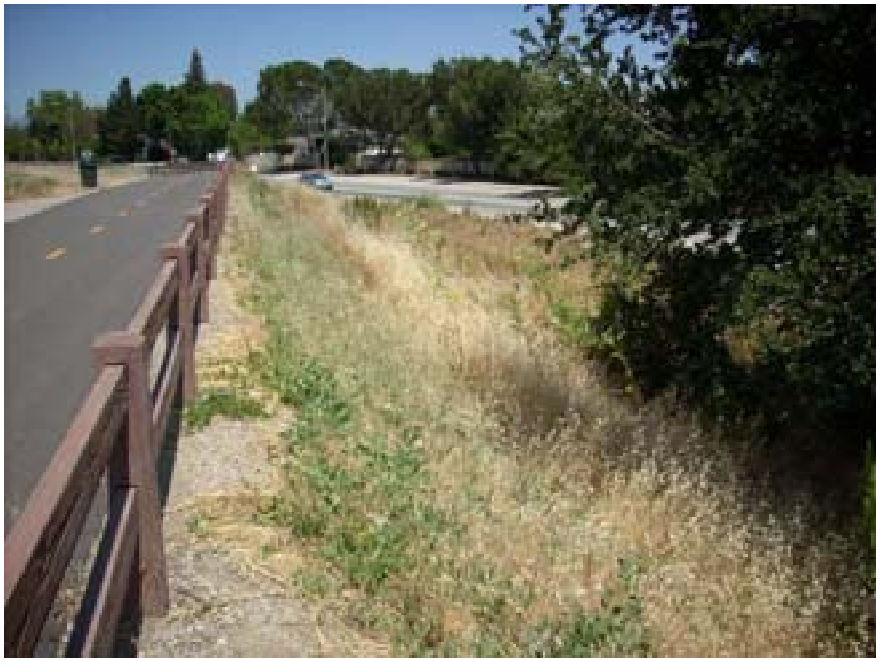
Photograph ID	Approximate Location (Project Station)	Description
020	10+00	Burrows on inboard levee slope

Photograph ID	Approximate Location (Project Station)	Description
021	10+00	Burrows on inboard levee slope

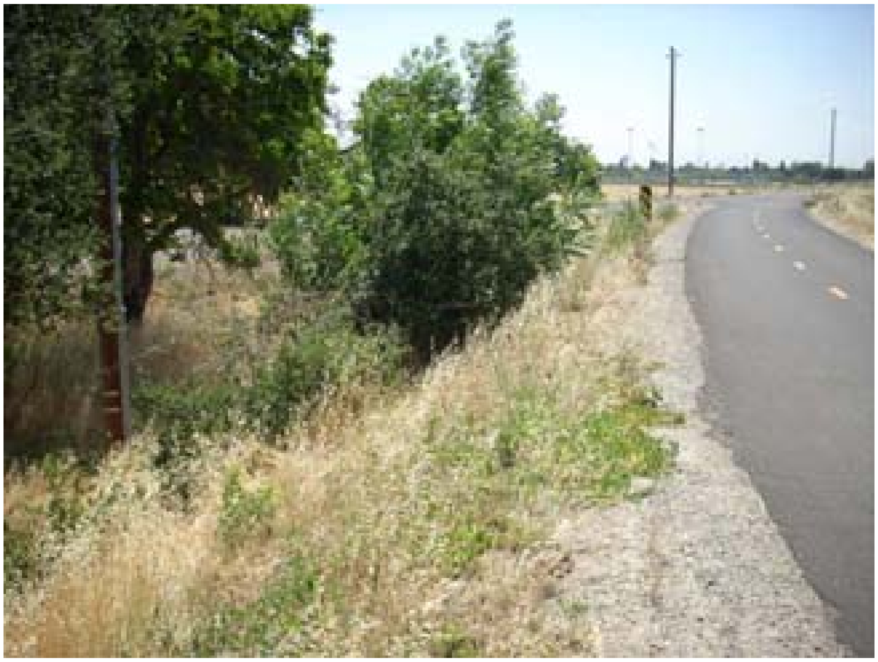
Photograph ID	Approximate Location (Project Station)	Description
022	11+00	Burrows on inboard levee slope, south view



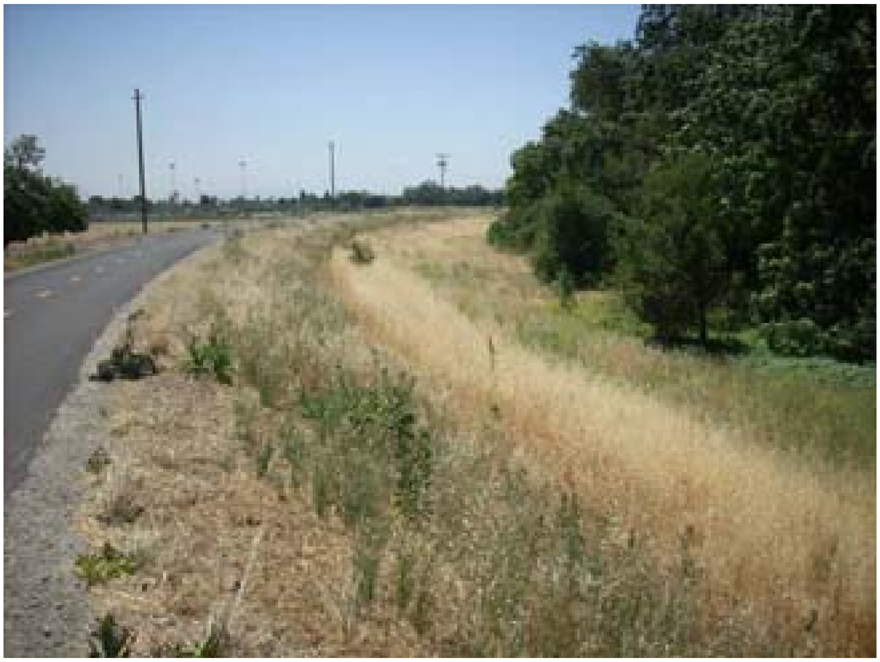
Photograph ID	Approximate Location (Project Station)	Description
023	12+50	North view of inboard levee slope and crest



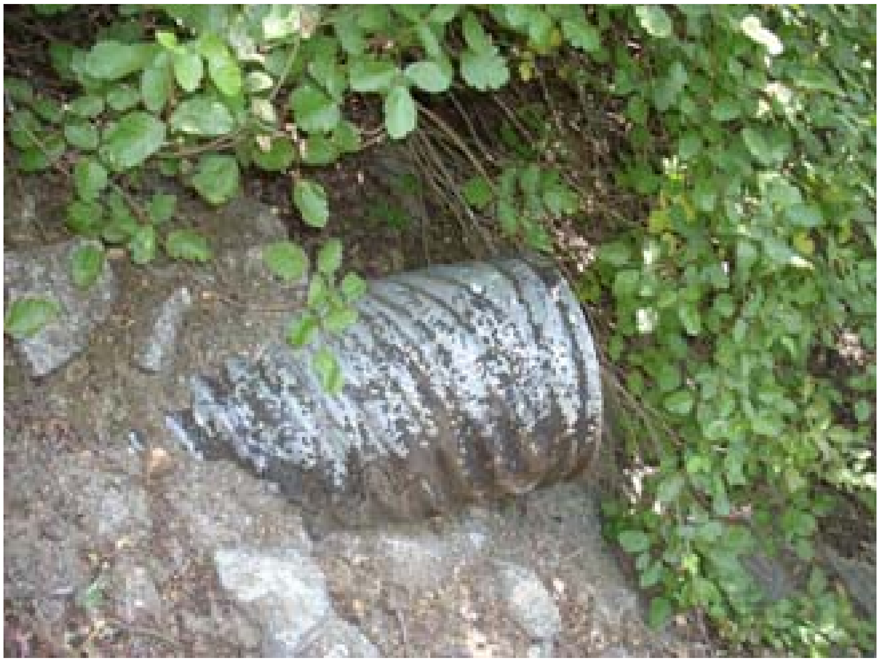
Photograph ID	Approximate Location (Project Station)	Description
024	12+50	North view of outboard levee slope and crest



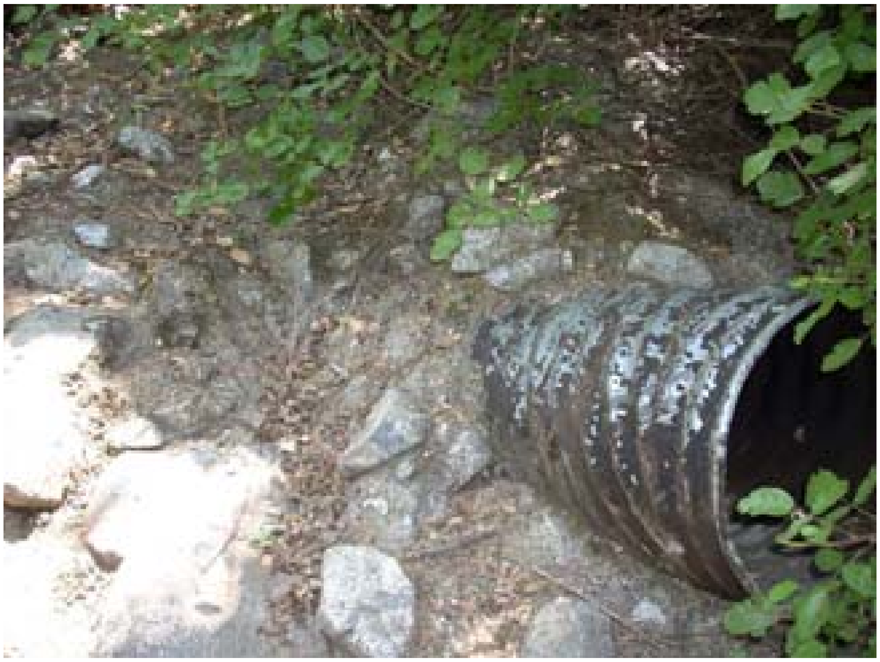
Photograph ID	Approximate Location (Project Station)	Description
025	12+50	South view of outboard levee slope and crest



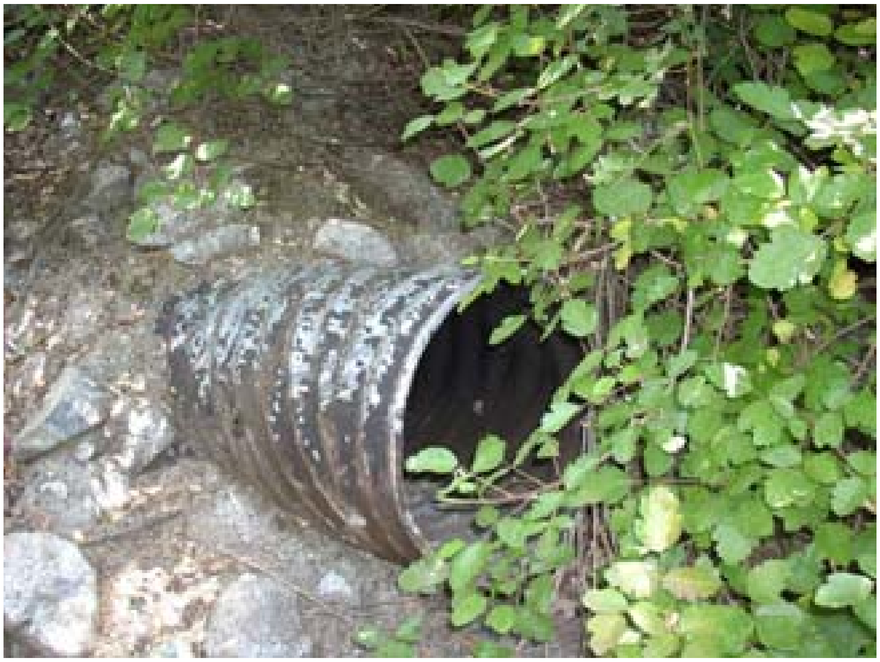
Photograph ID	Approximate Location (Project Station)	Description
026	12+50	South view of inboard levee slope and bicycle trail



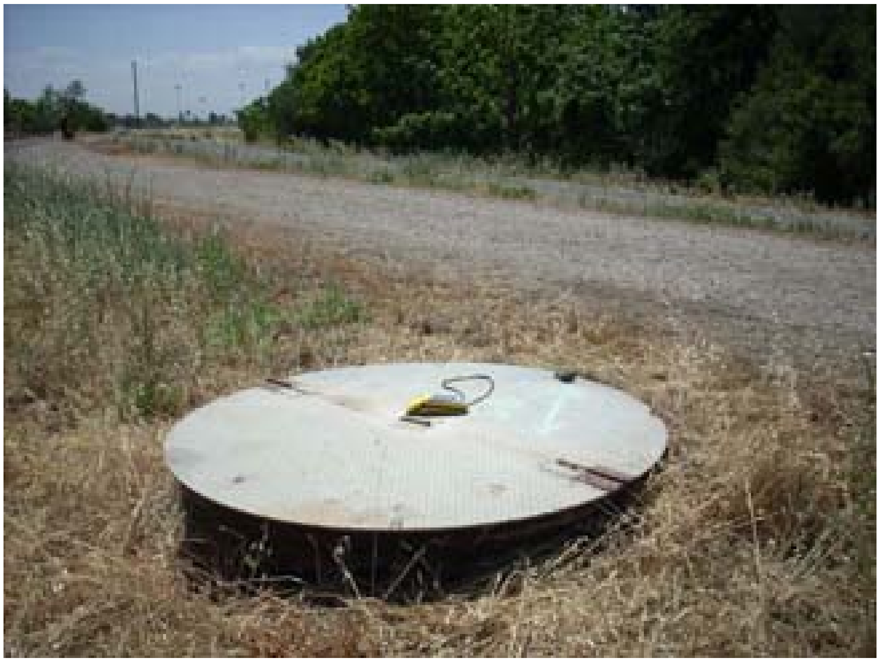
Photograph ID	Approximate Location (Project Station)	Description
027	14+00	18” CMP outfall



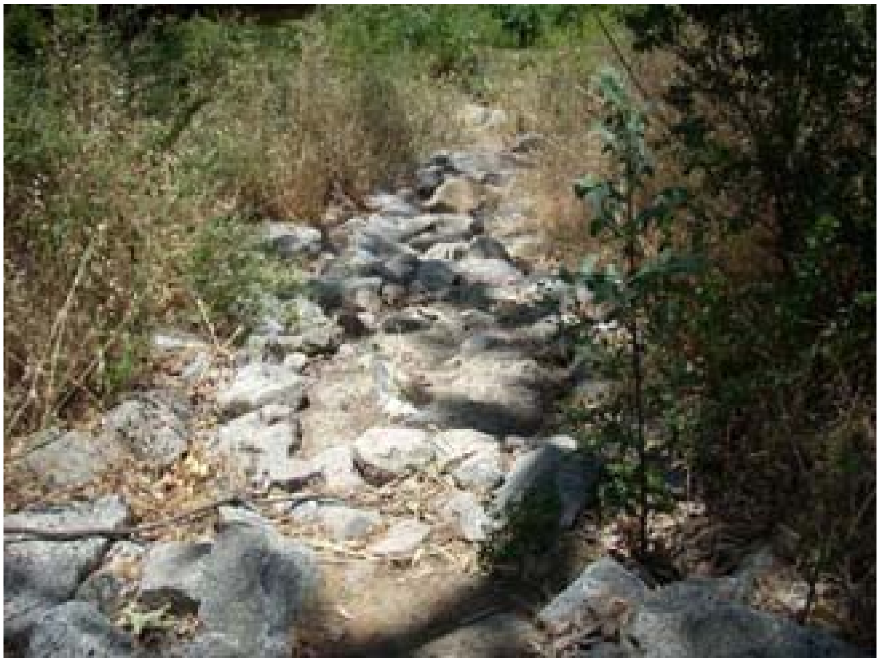
Photograph ID	Approximate Location (Project Station)	Description
028	14+00	18” CMP outfall



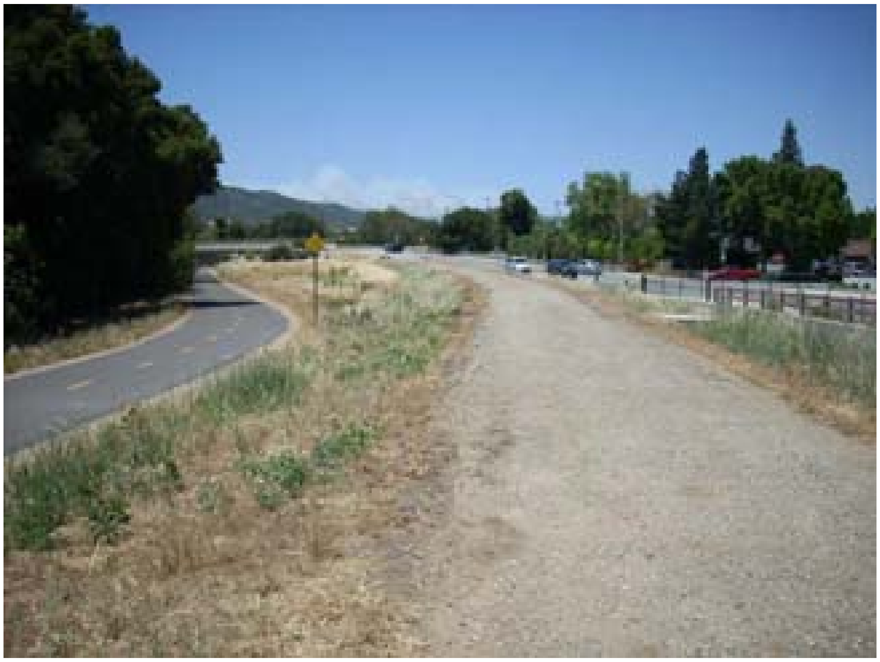
Photograph ID	Approximate Location (Project Station)	Description
029	14+00	18” CMP outfall



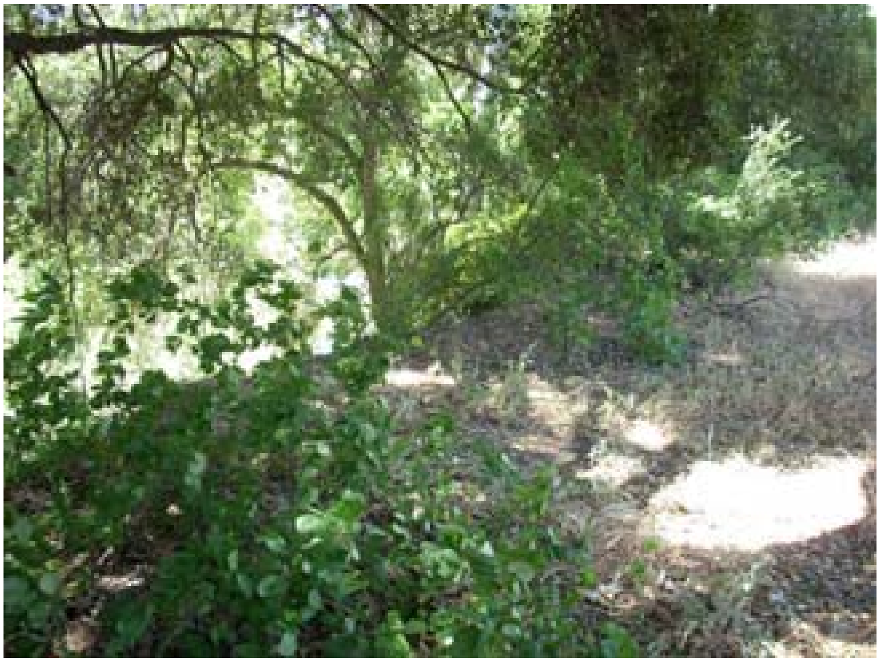
Photograph ID	Approximate Location (Project Station)	Description
030	14+80	Storm drain manhole



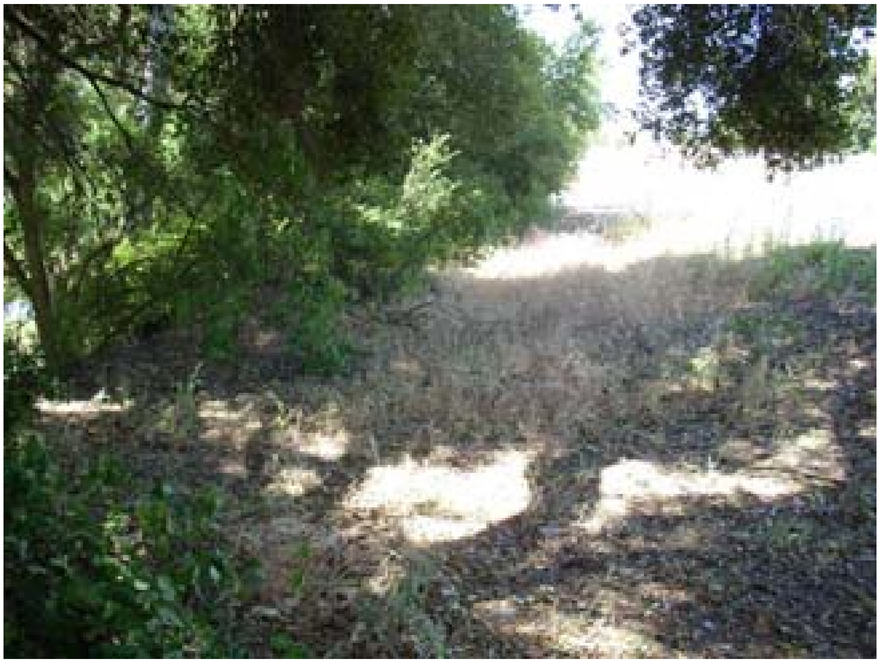
Photograph ID	Approximate Location (Project Station)	Description
031	18+50	12” CMP storm drain outlet and riprap apron



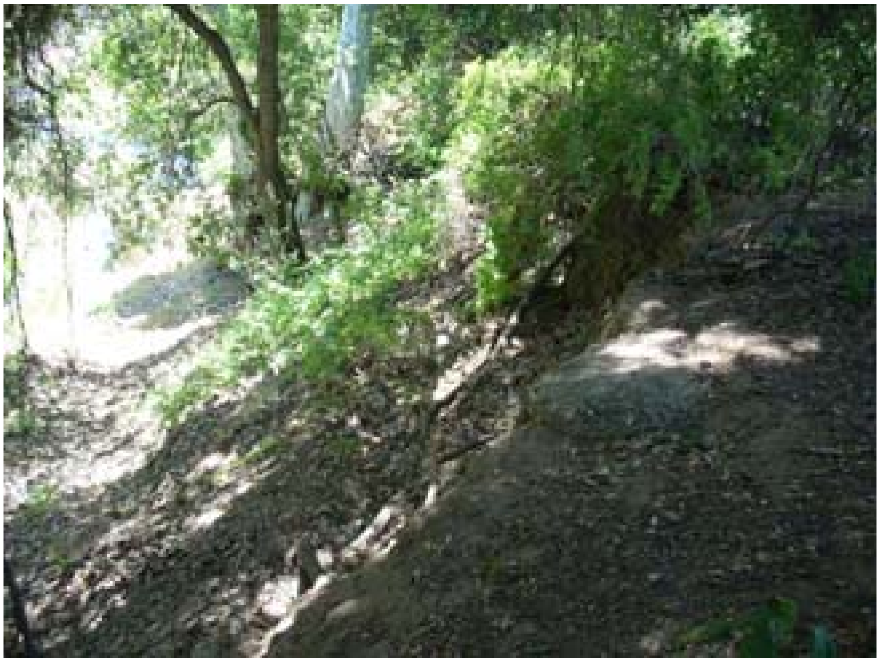
Photograph ID	Approximate Location (Project Station)	Description
032	14+00	North view of levee crest and bike trails



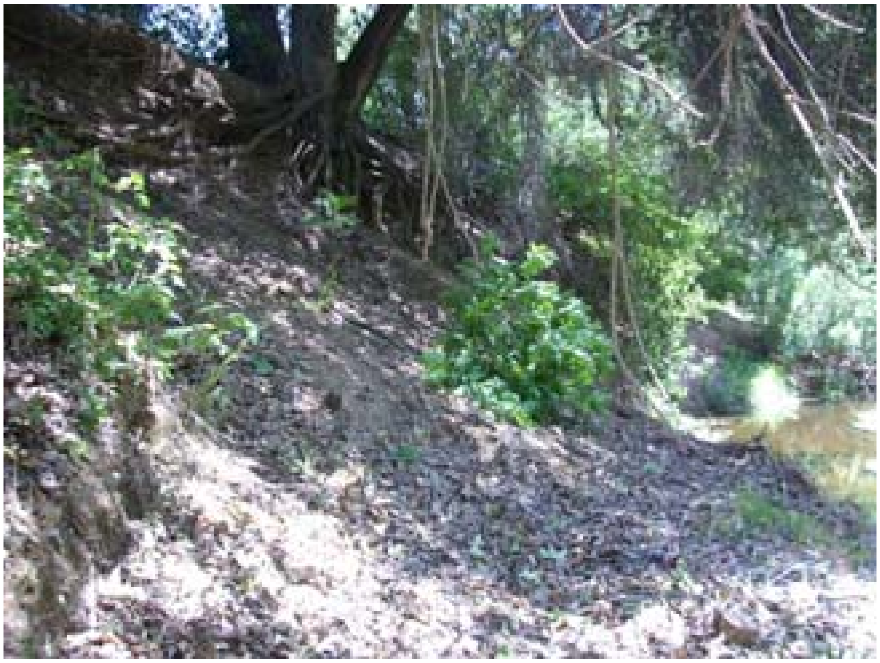
Photograph ID	Approximate Location (Project Station)	Description
033	14+50 – 17+50	Steep stream bank slope near bicycle trail and toe of levee



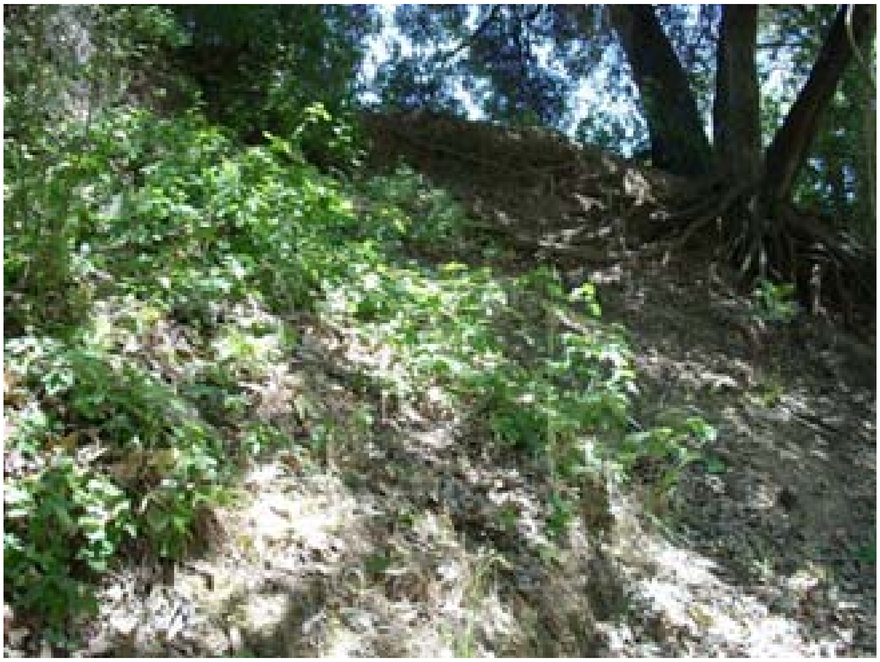
Photograph ID	Approximate Location (Project Station)	Description
034	14+50 – 17+50	Steep stream bank slope near bicycle trail and toe of levee



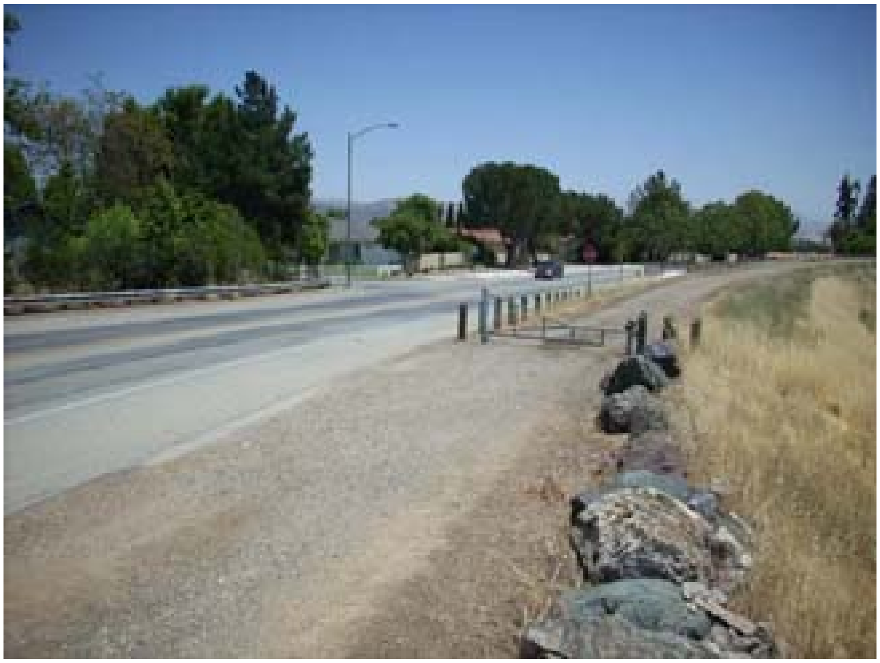
Photograph ID	Approximate Location (Project Station)	Description
035	14+50 – 17+50	Steep stream bank slope near bicycle trail and toe of levee



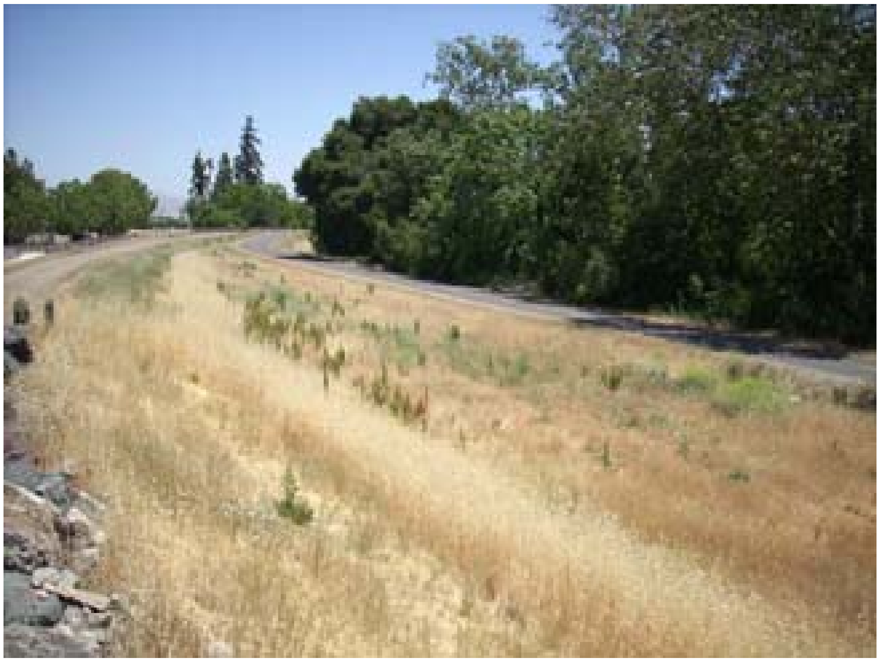
Photograph ID	Approximate Location (Project Station)	Description
036	14+50 – 17+50	Steep stream bank slope near bicycle trail and toe of levee



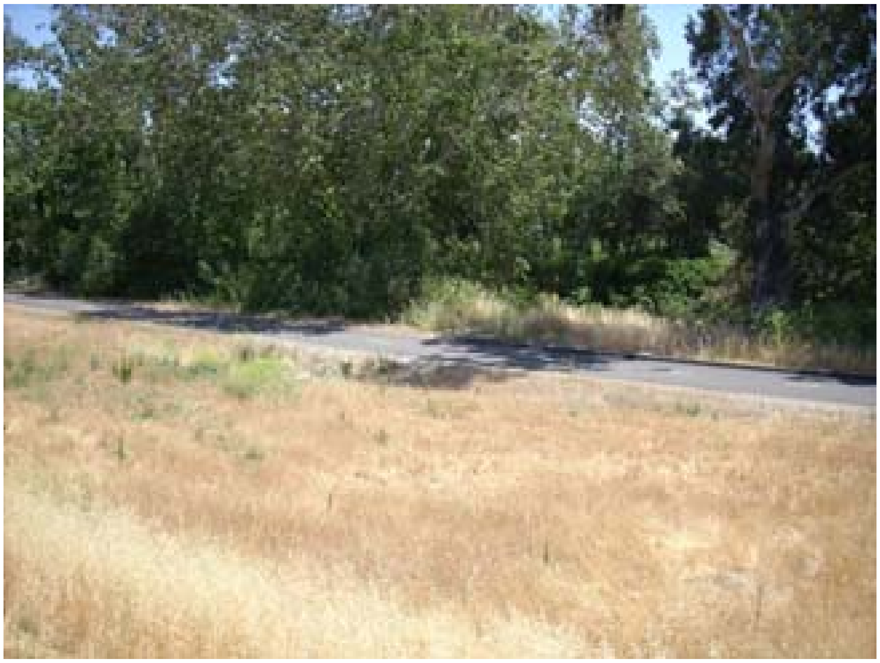
Photograph ID	Approximate Location (Project Station)	Description
037	14+50 – 17+50	Steep stream bank slope near bicycle trail and toe of levee



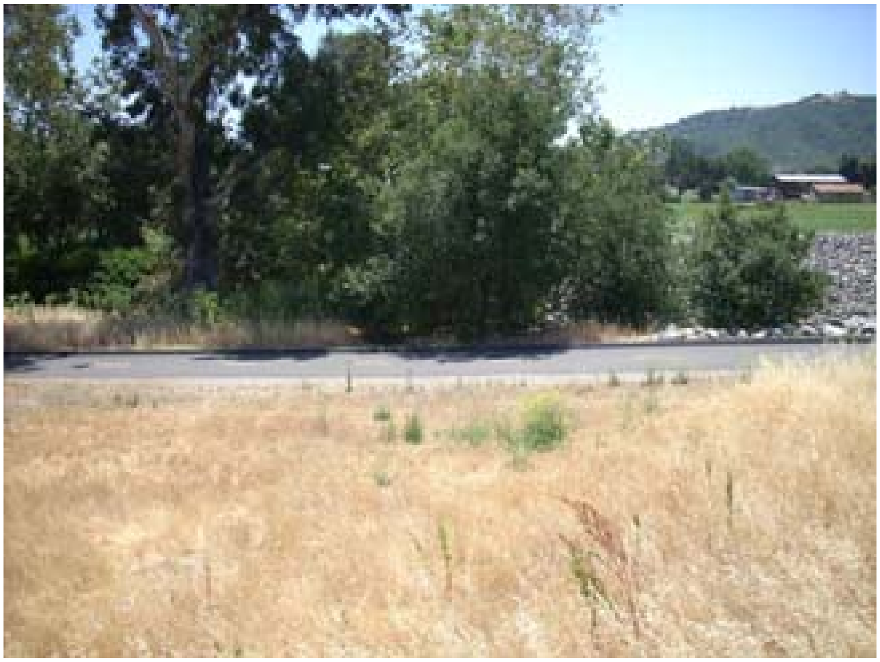
Photograph ID	Approximate Location (Project Station)	Description
038	19+30	East view of Thomas Road and levee crest (panorama with 038 – 043)



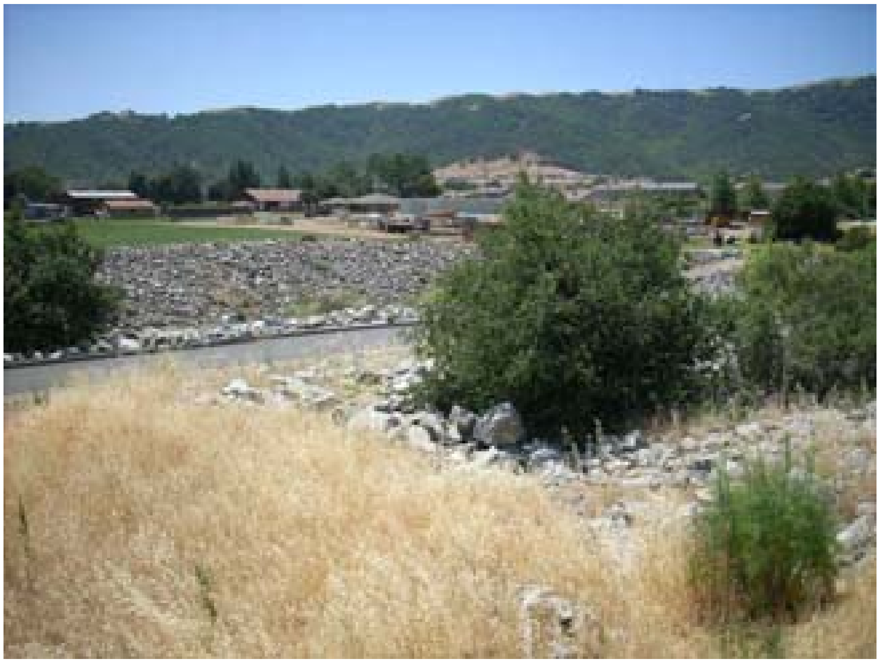
Photograph ID	Approximate Location (Project Station)	Description
039	19+30	Southeast view of inboard levee slope (panorama with 038 – 043)



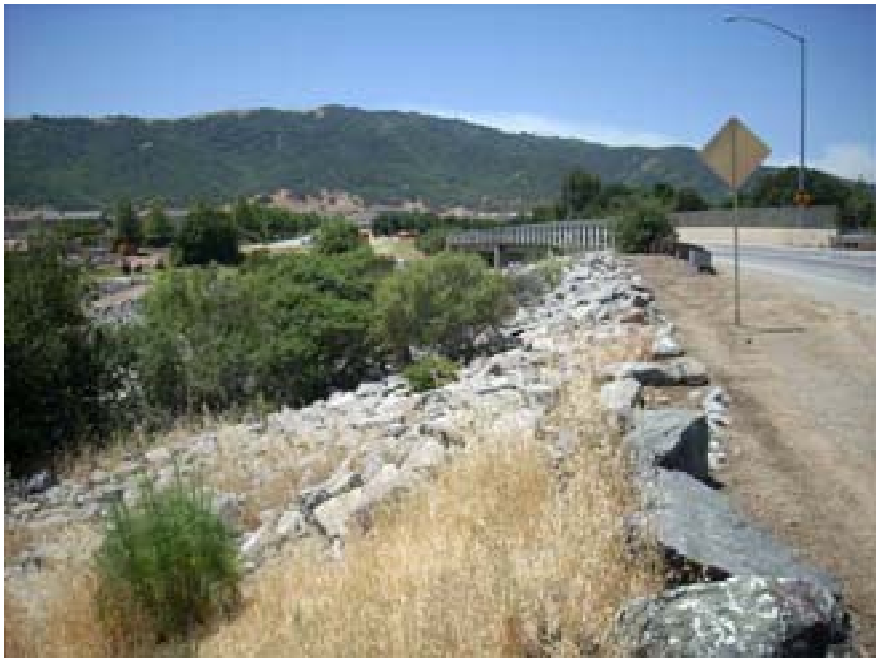
Photograph ID	Approximate Location (Project Station)	Description
040	19+30	Inboard levee slope, south view (panorama with 038 – 043)



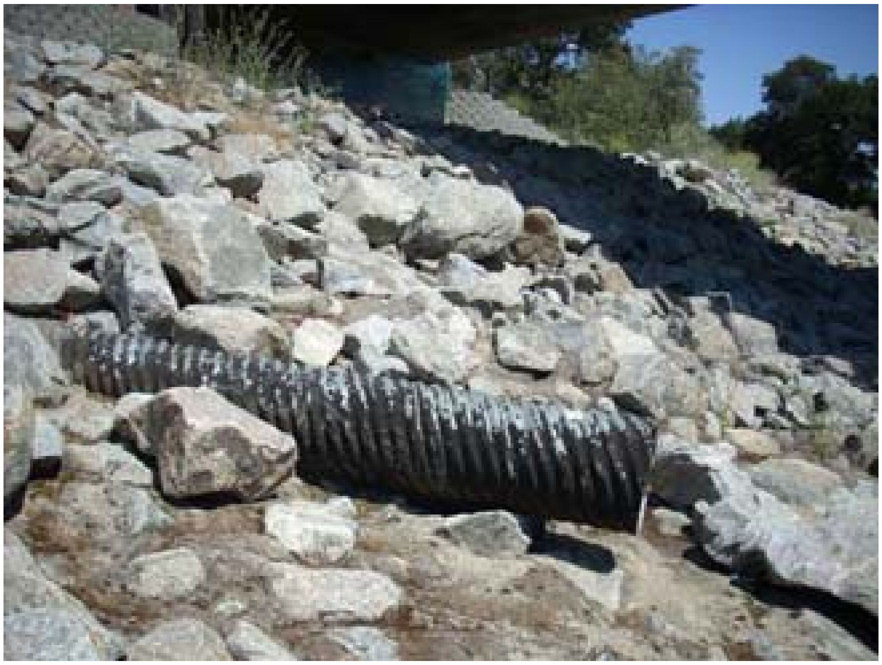
Photograph ID	Approximate Location (Project Station)	Description
041	19+30	Inboard levee slope and bicycle trail (panorama with 038 – 043)



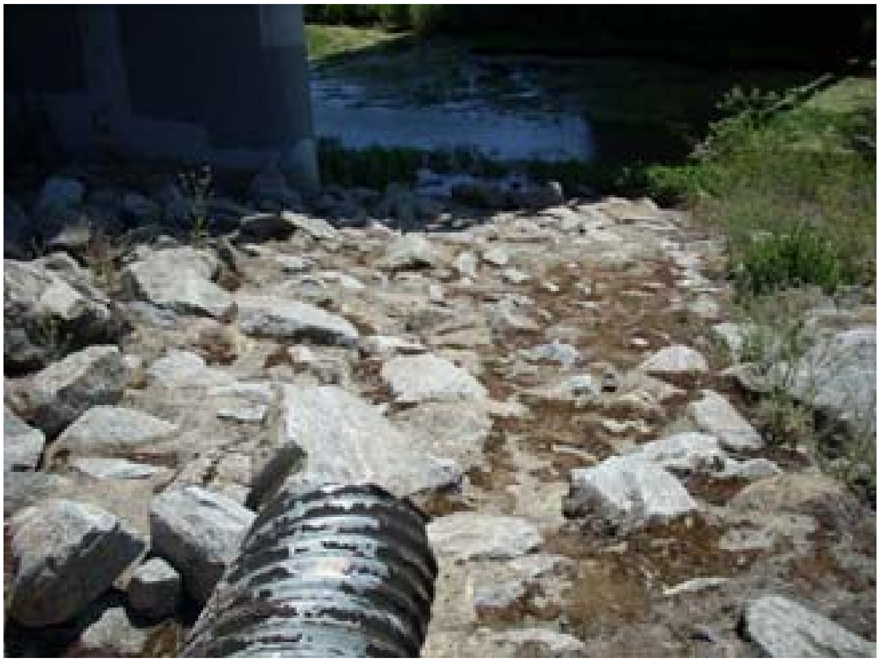
Photograph ID	Approximate Location (Project Station)	Description
042	19+30	Inboard levee slope, southwest view (panorama with 038 – 043)



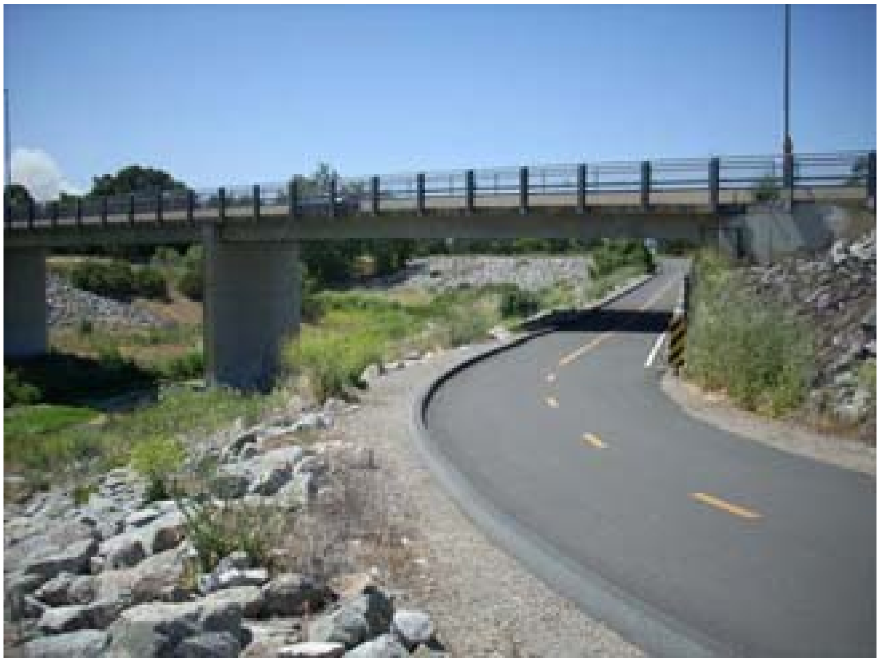
Photograph ID	Approximate Location (Project Station)	Description
043	19+30	West view of levee and Thomas Road Bridge (panorama with 038 – 043)



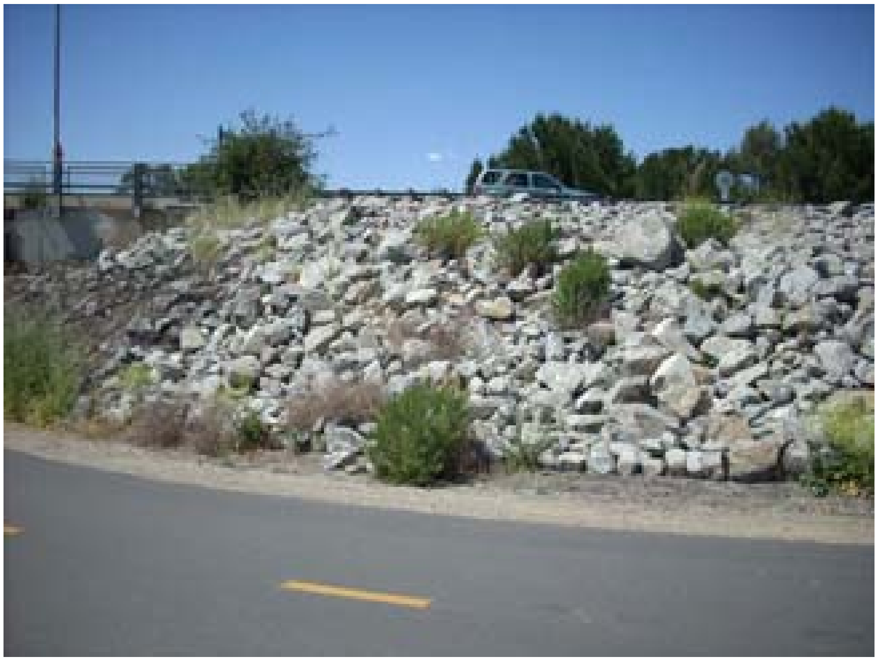
Photograph ID	Approximate Location (Project Station)	Description
044	21+50	18” CMP outfall and apron



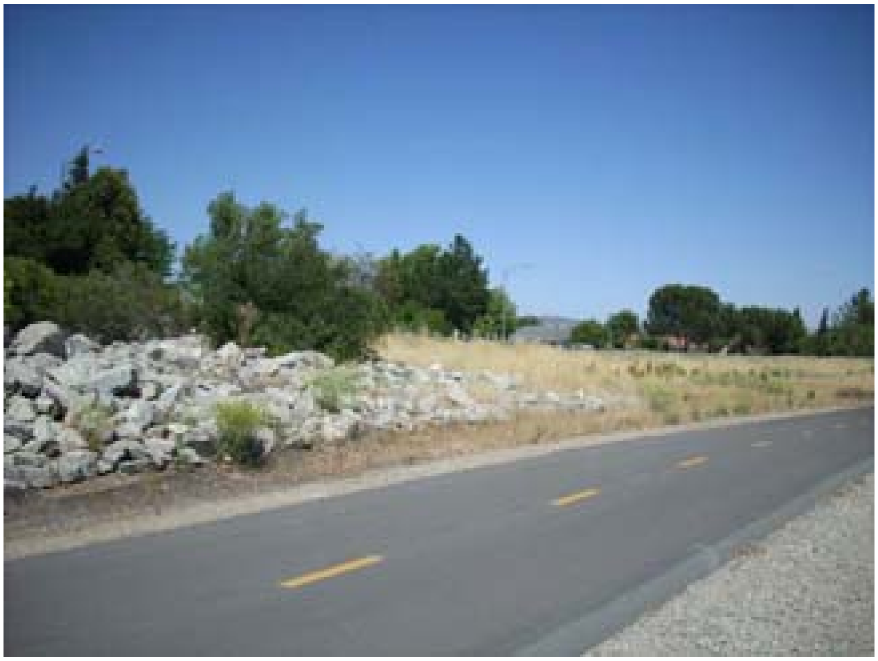
Photograph ID	Approximate Location (Project Station)	Description
045	21+50	18" CMP outfall and apron



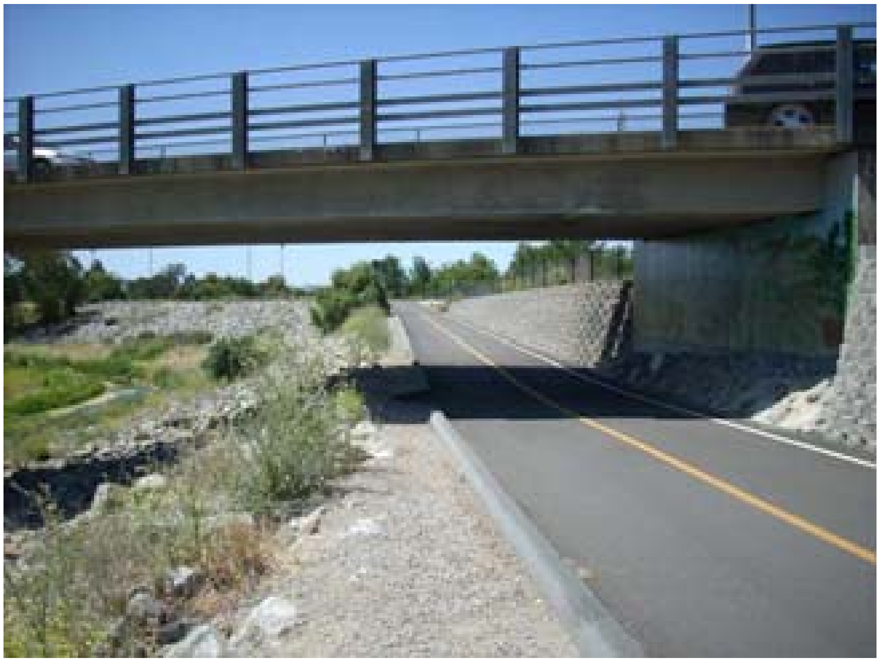
Photograph ID	Approximate Location (Project Station)	Description
046	20+00	North view of channel, bicycle trail, and bridge (panorama with 046 – 048)



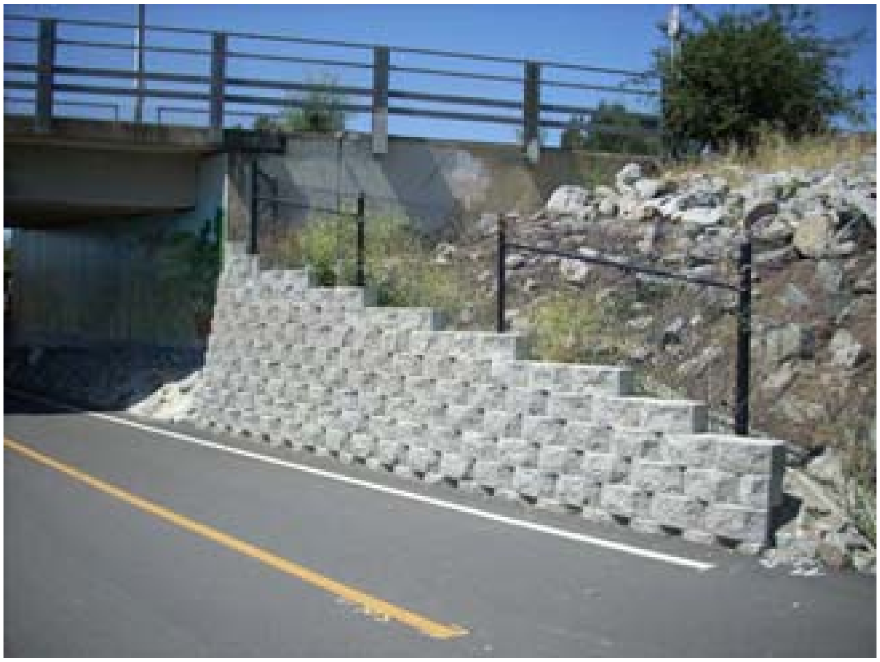
Photograph ID	Approximate Location (Project Station)	Description
047	20+00	Riprap protection around bridge abutment and approach (panorama with 046 – 048)



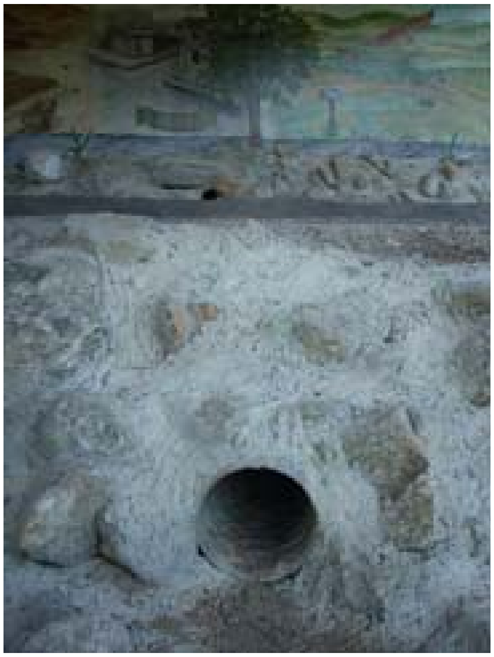
Photograph ID	Approximate Location (Project Station)	Description
048	20+00	Riprap protection around bridge abutment and approach (panorama with 046 – 048)



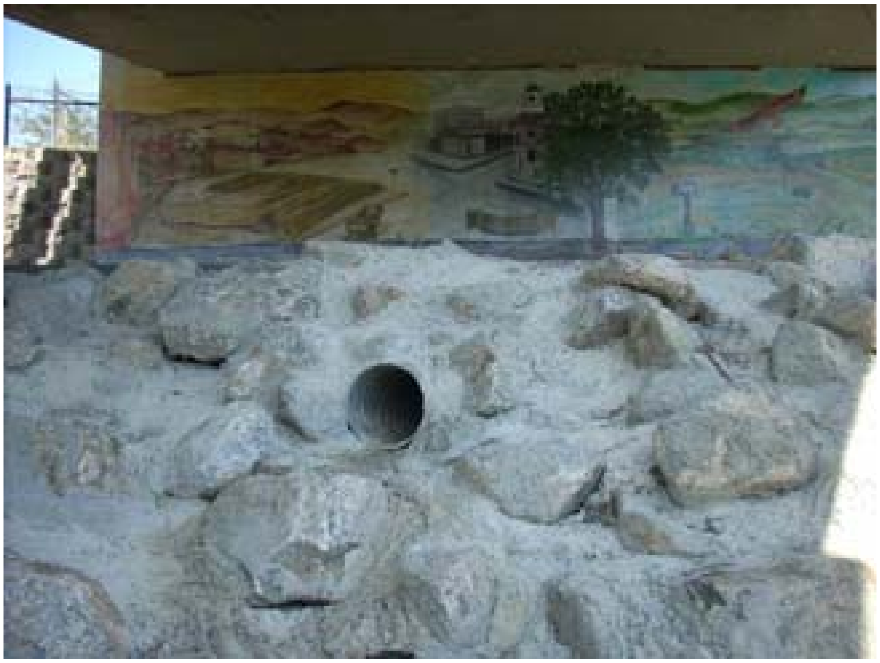
Photograph ID	Approximate Location (Project Station)	Description
049	20+50	North view, MSE wall and bridge



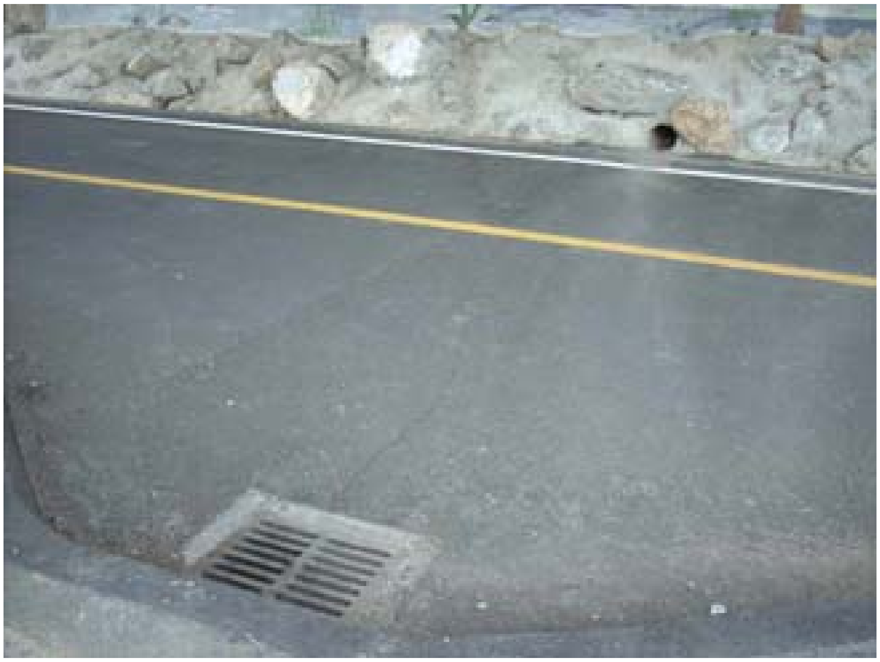
Photograph ID	Approximate Location (Project Station)	Description
050	20+50	MSE wall and bridge



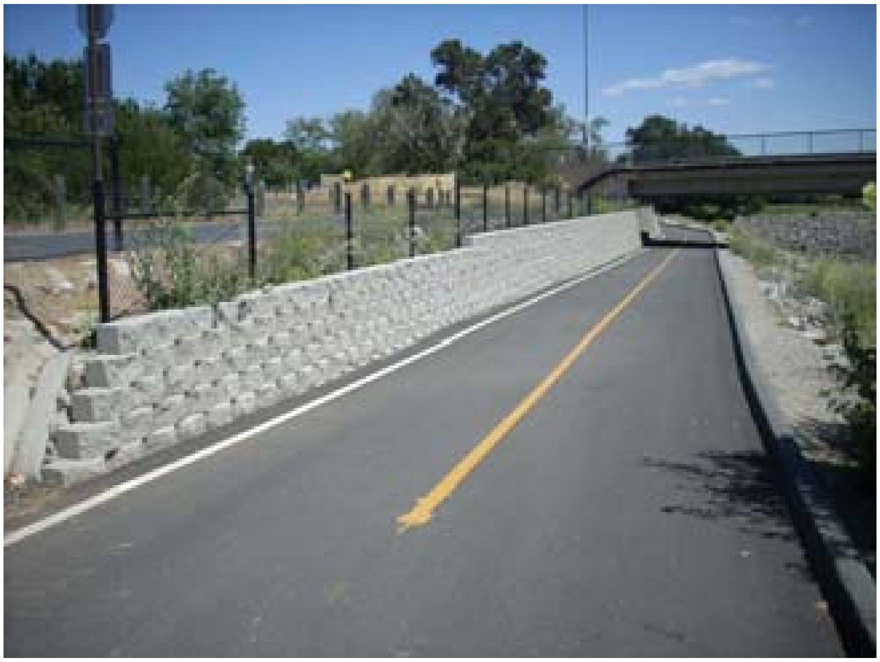
Photograph ID	Approximate Location (Project Station)	Description
051	20+80	12” CMP outlet (under bridge), discharges drainage from opposite side of trail



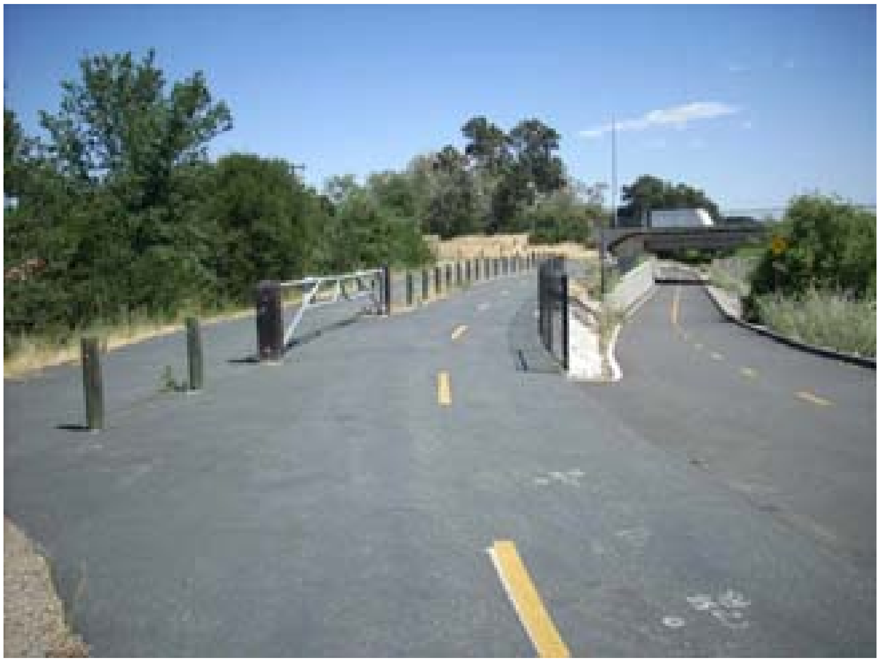
Photograph ID	Approximate Location (Project Station)	Description
052	20+80	12” CMP drainage outlet (under bridge)



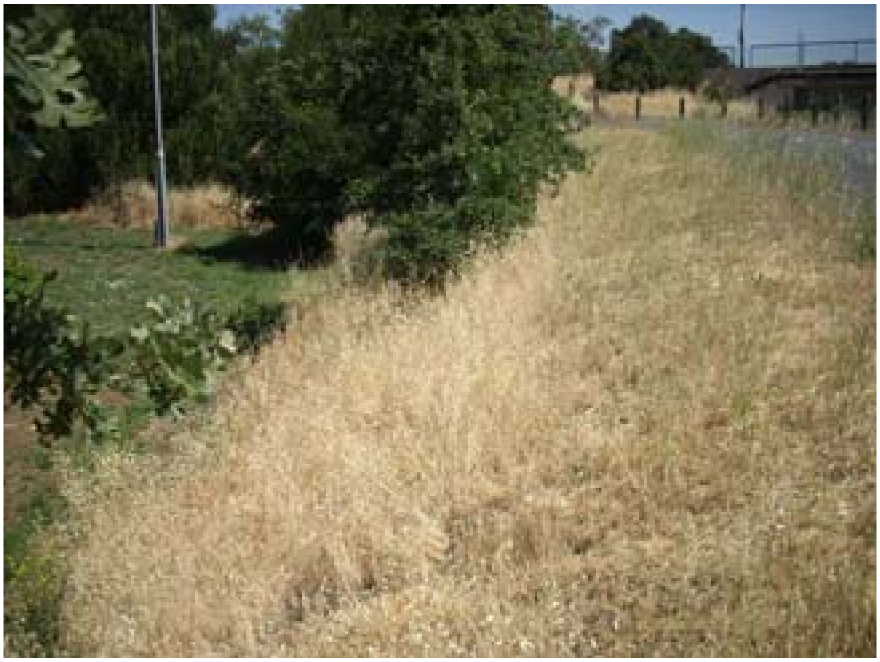
Photograph ID	Approximate Location (Project Station)	Description
053	20+80	Storm drain inlet on bicycle trail



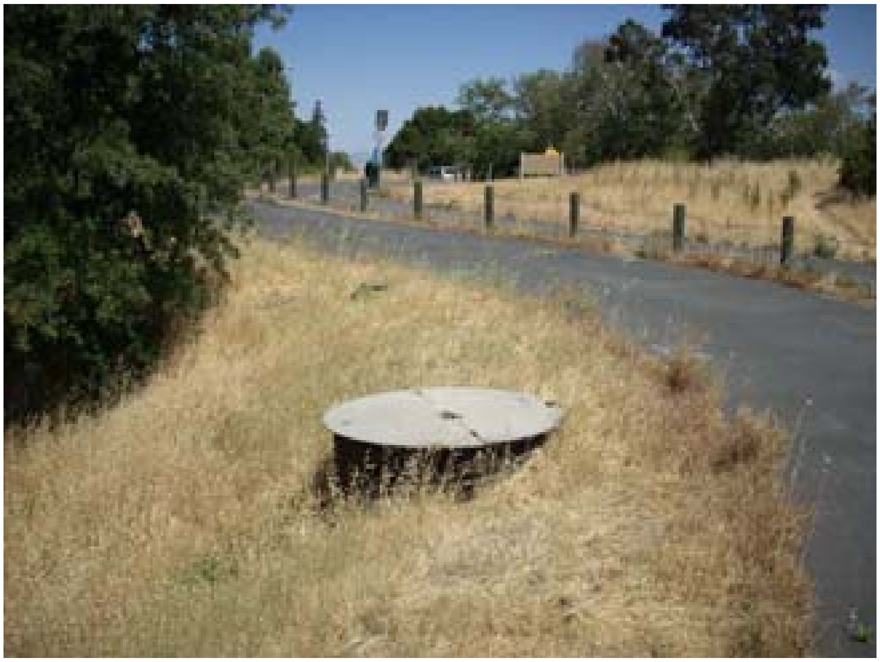
Photograph ID	Approximate Location (Project Station)	Description
054	23+00	South view, MSE wall and bridge



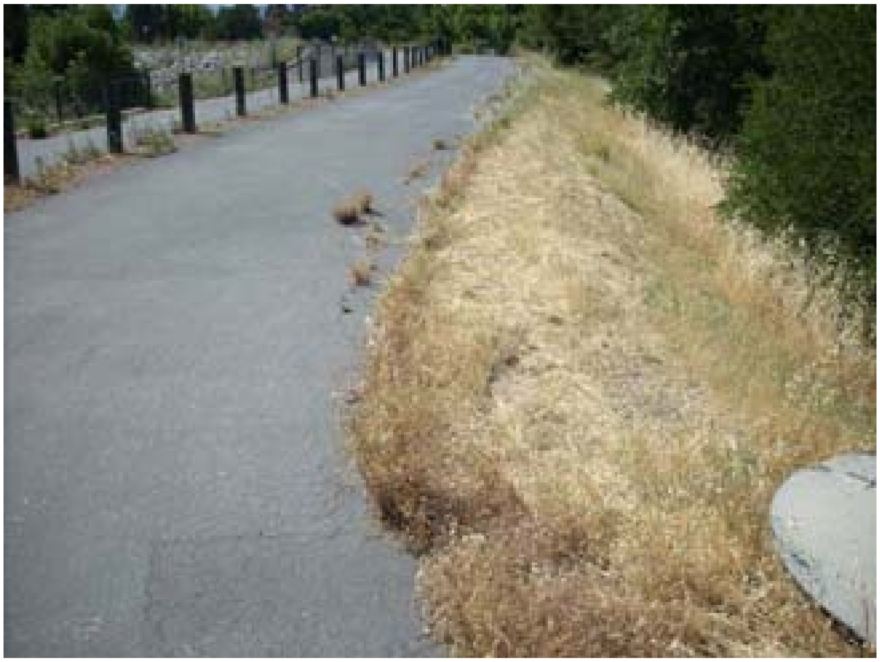
Photograph ID	Approximate Location (Project Station)	Description
055	24+00	South view of levee crest and bicycle trails



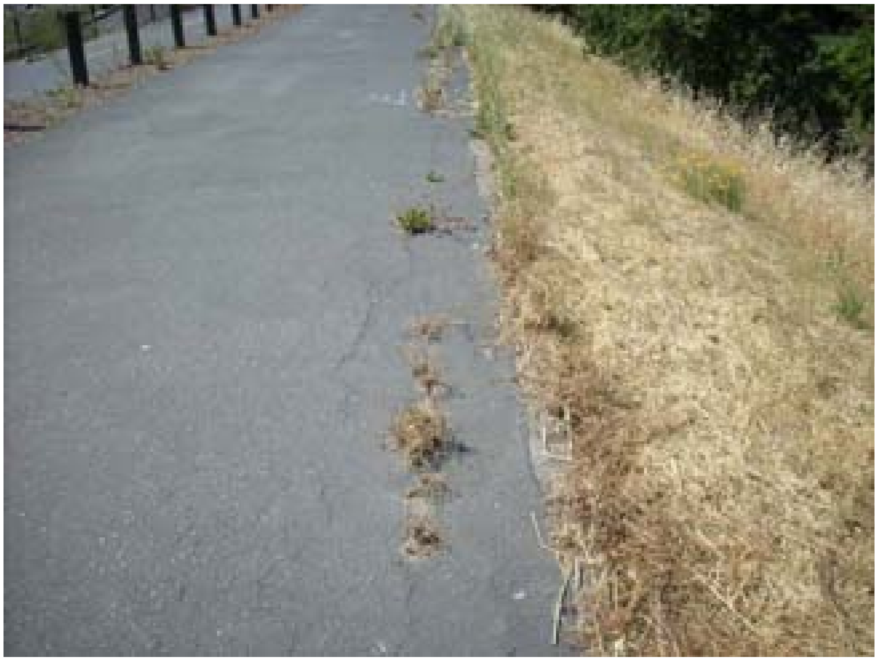
Photograph ID	Approximate Location (Project Station)	Description
056	22+50	South view of outboard levee slope



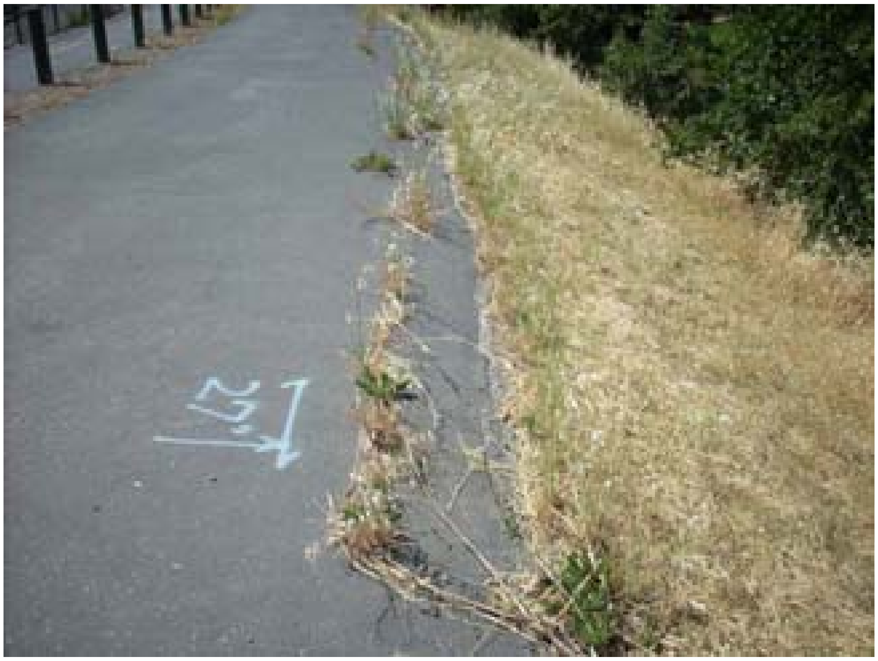
Photograph ID	Approximate Location (Project Station)	Description
057	22+00	Storm drain and sanitary sewer manholes



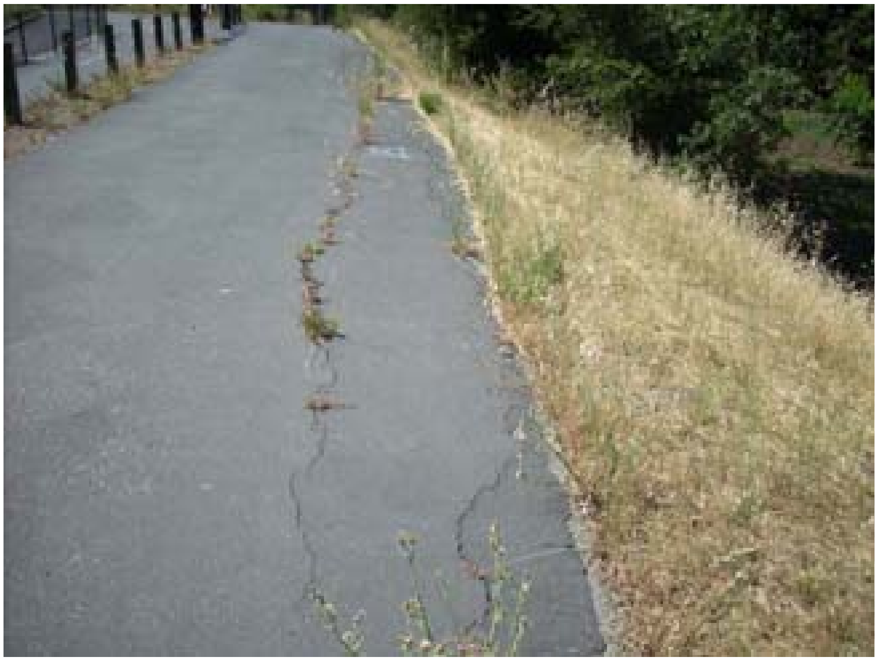
Photograph ID	Approximate Location (Project Station)	Description
058	21+50 – 23+80	Longitudinal cracks at crest of outboard levee slope, north view



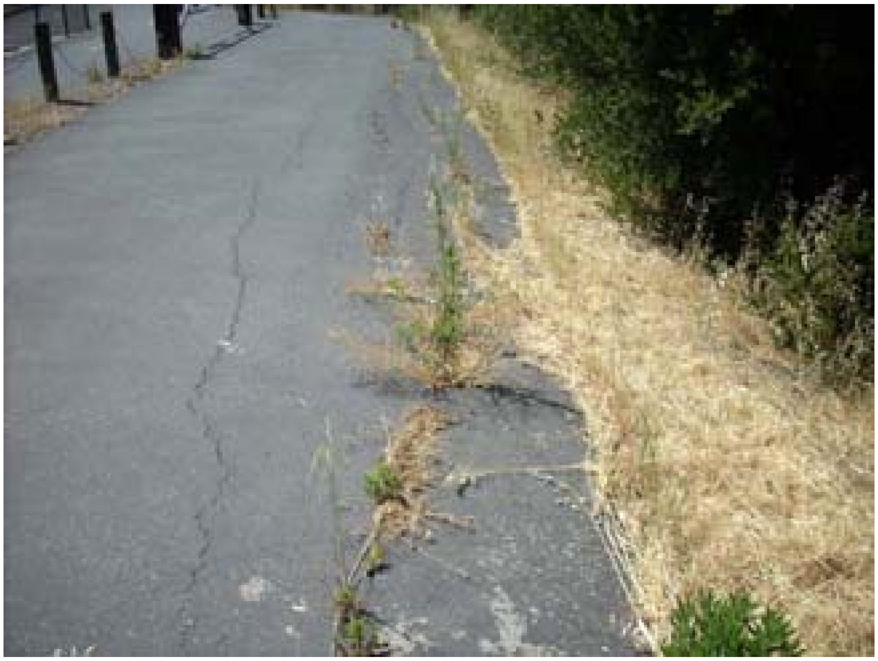
Photograph ID	Approximate Location (Project Station)	Description
059	21+50 – 23+80	Longitudinal cracks at crest of outboard levee slope, north view



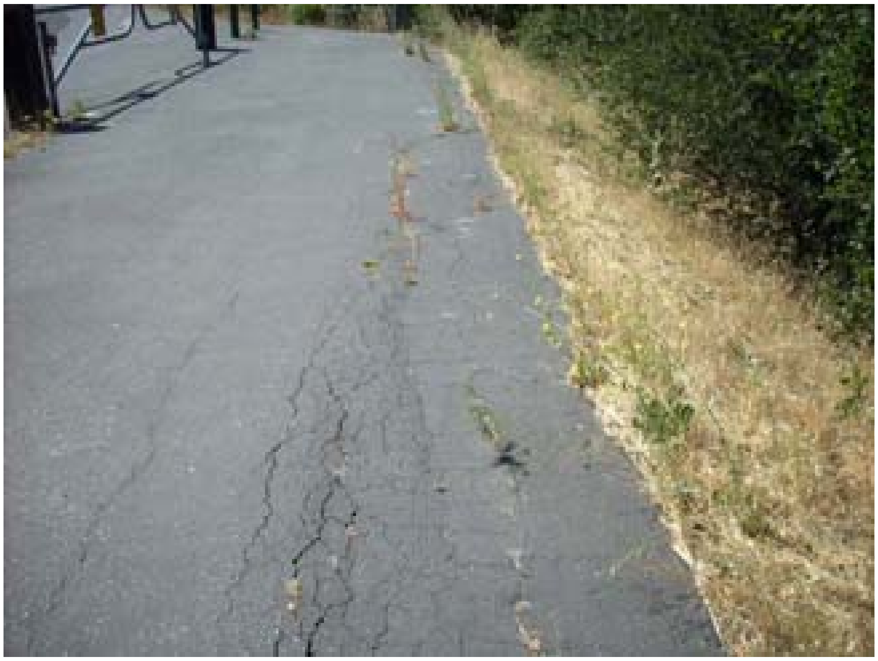
Photograph ID	Approximate Location (Project Station)	Description
060	21+50 – 23+80	Longitudinal cracks at crest of outboard levee slope, north view



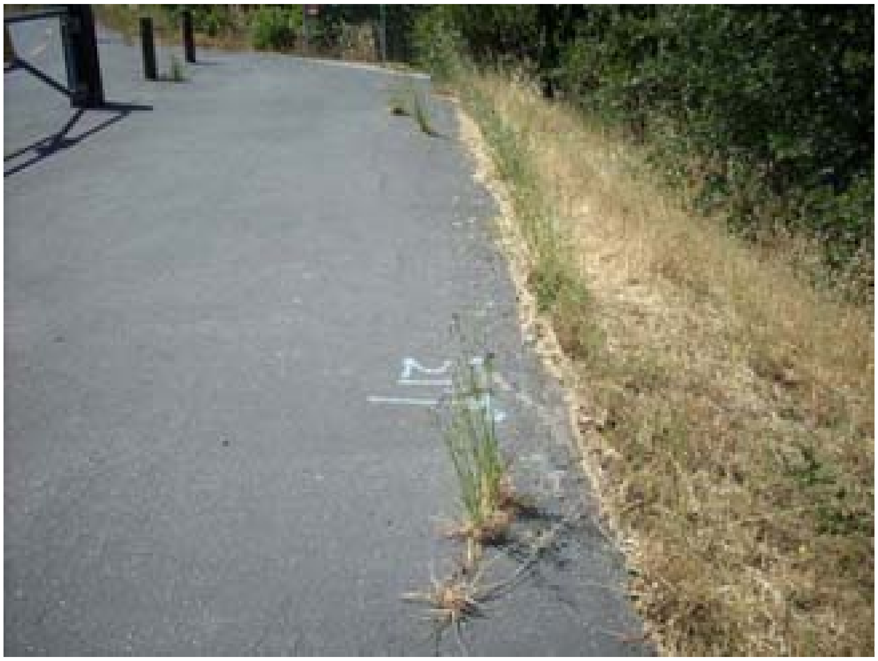
Photograph ID	Approximate Location (Project Station)	Description
061	21+50 – 23+80	Longitudinal cracks at crest of outboard levee slope, north view



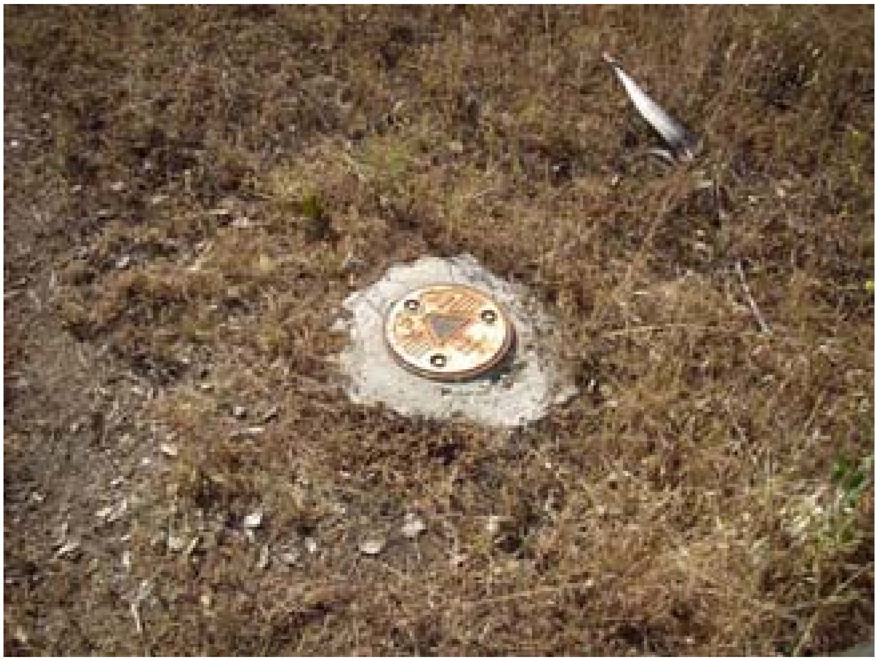
Photograph ID	Approximate Location (Project Station)	Description
062	21+50 – 23+80	Longitudinal cracks at crest of outboard levee slope, north view



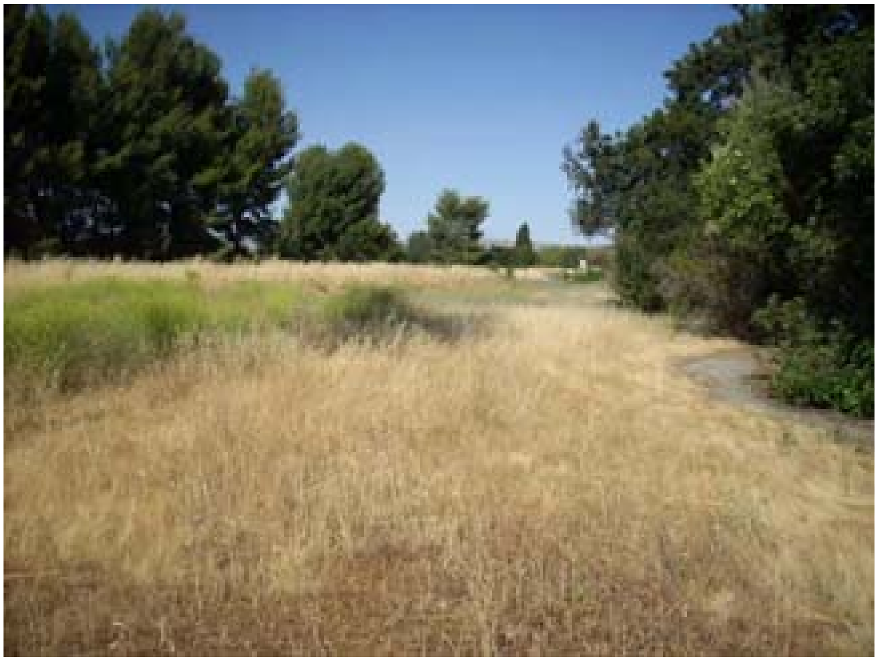
Photograph ID	Approximate Location (Project Station)	Description
063	21+50 – 23+80	Longitudinal cracks at crest of outboard levee slope, north view



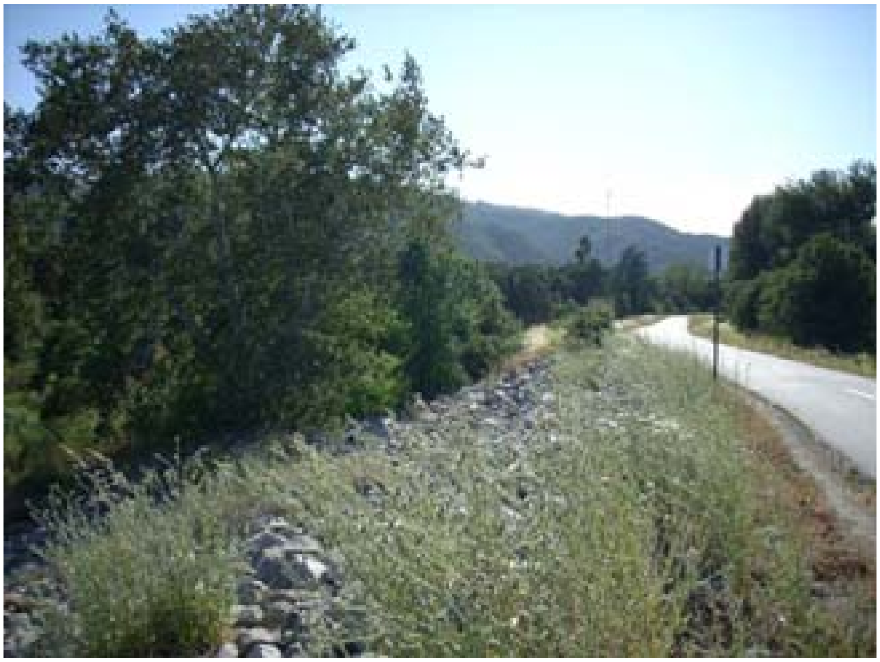
Photograph ID	Approximate Location (Project Station)	Description
064	21+50 – 23+80	Longitudinal cracks at crest of outboard levee slope, north view



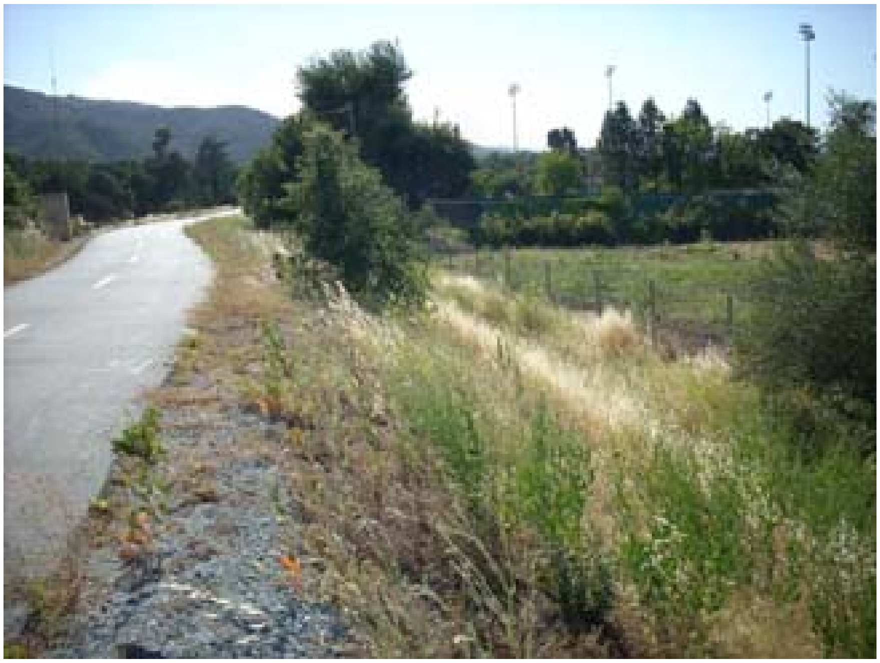
Photograph ID	Approximate Location (Project Station)	Description
065	33+00	Monitoring well, 8-inch flush-mounted box, no identification markings



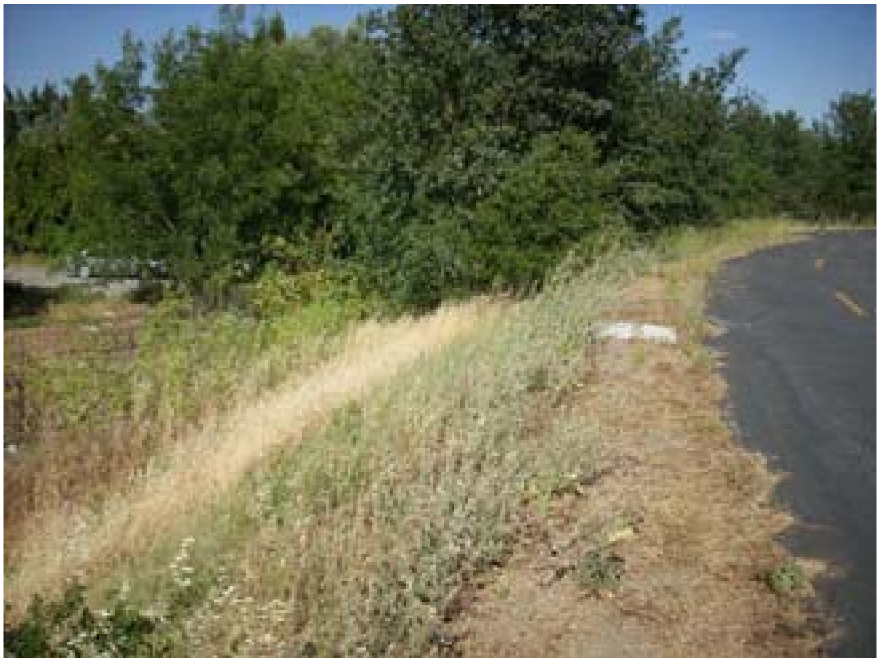
Photograph ID	Approximate Location (Project Station)	Description
066	33+00	East view of inboard levee slope from floodplain area



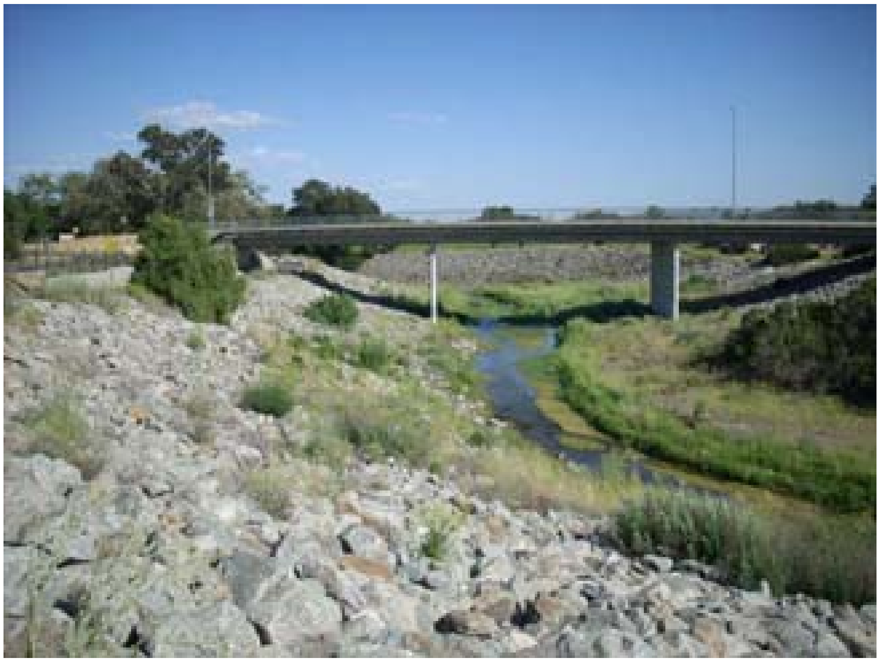
Photograph ID	Approximate Location (Project Station)	Description
067	25+00	North view of inboard levee/stream bank slopes



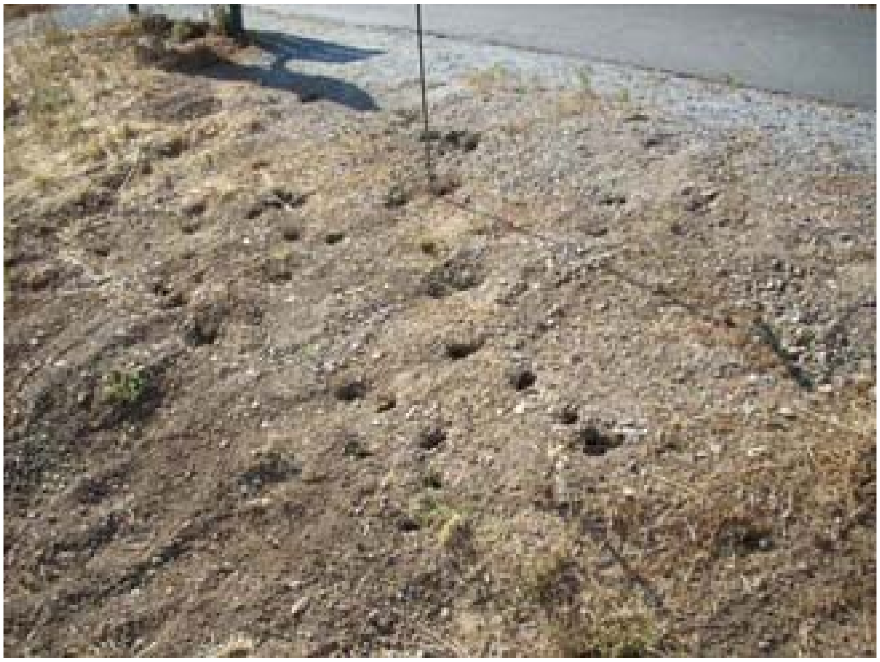
Photograph ID	Approximate Location (Project Station)	Description
068	25+00	North view of outboard levee slope



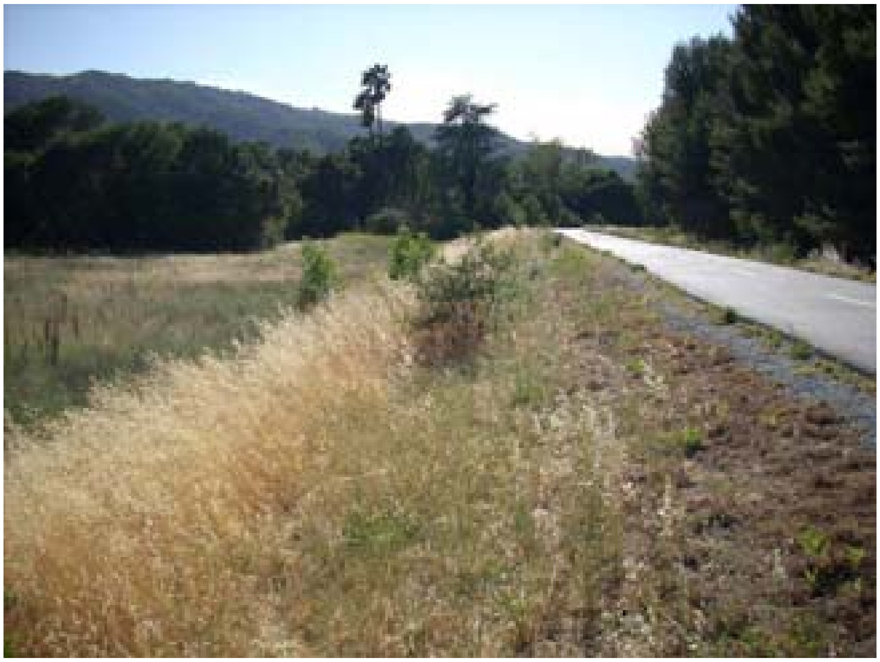
Photograph ID	Approximate Location (Project Station)	Description
069	25+00	South view of outboard levee slope



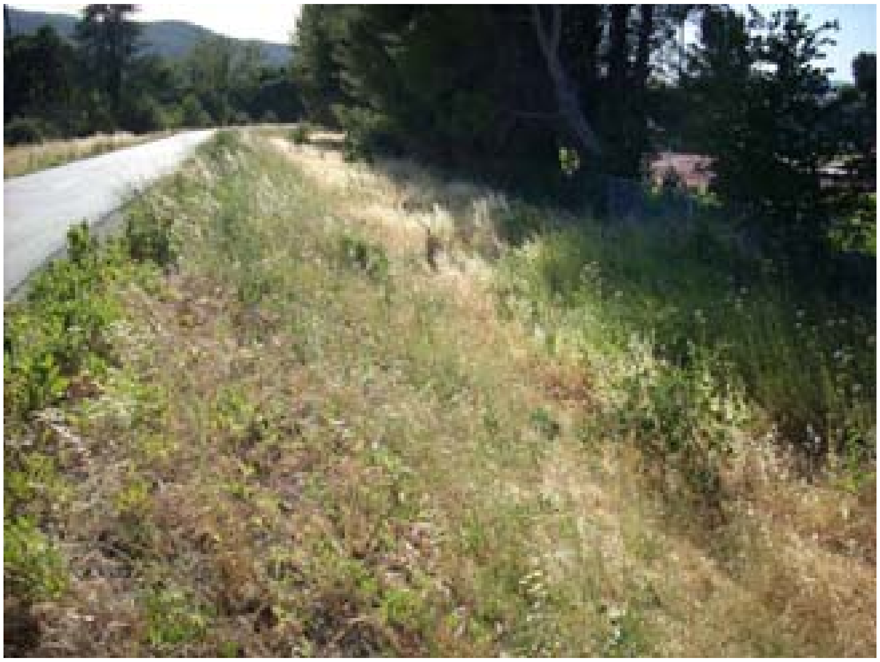
Photograph ID	Approximate Location (Project Station)	Description
070	25+00	South view of inboard levee/stream bank slopes and channel



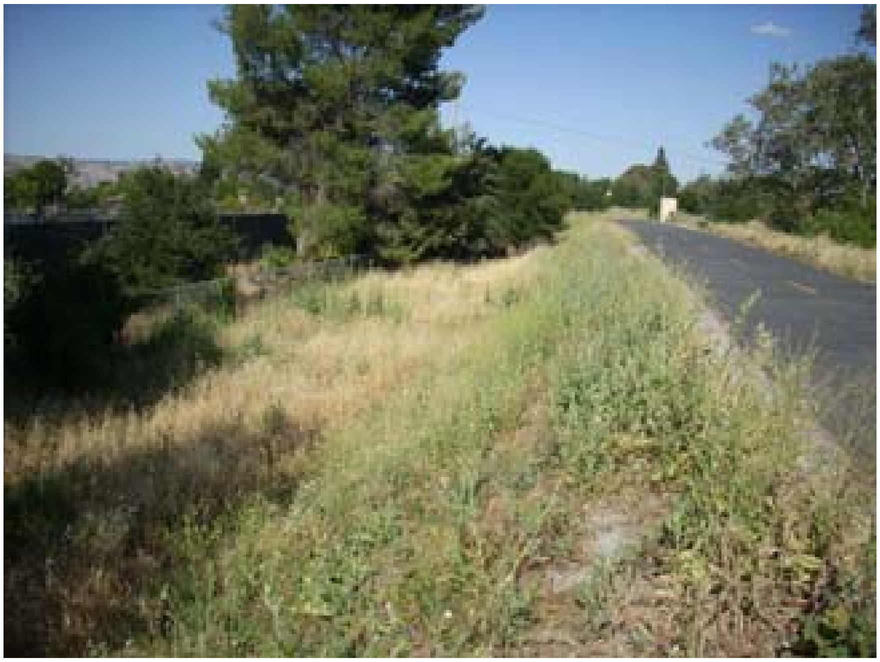
Photograph ID	Approximate Location (Project Station)	Description
071	27+00	Gopher burrows on inboard levee slope



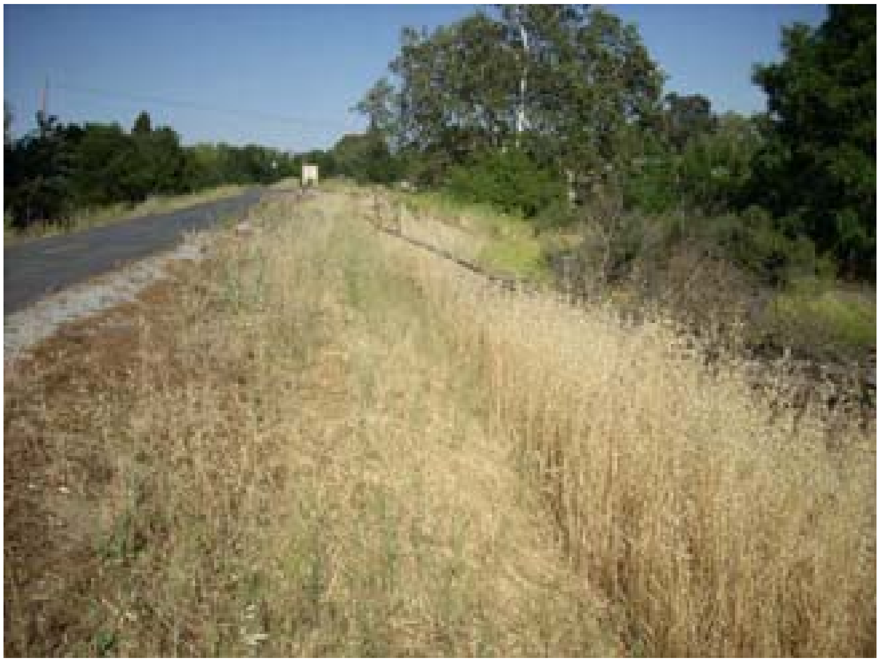
Photograph ID	Approximate Location (Project Station)	Description
072	29+00	North view of inboard levee slope



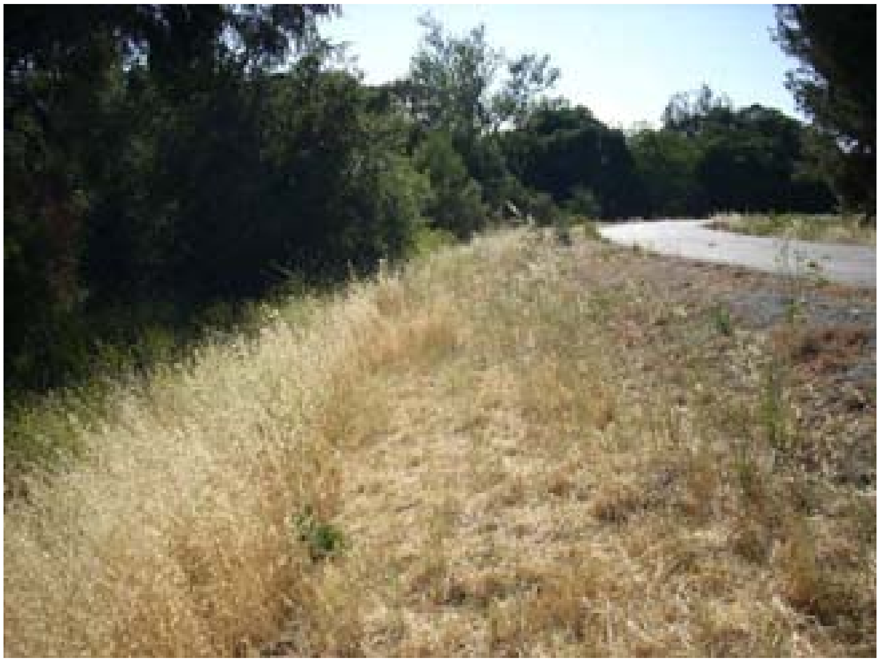
Photograph ID	Approximate Location (Project Station)	Description
073	29+00	North view of outboard levee slope



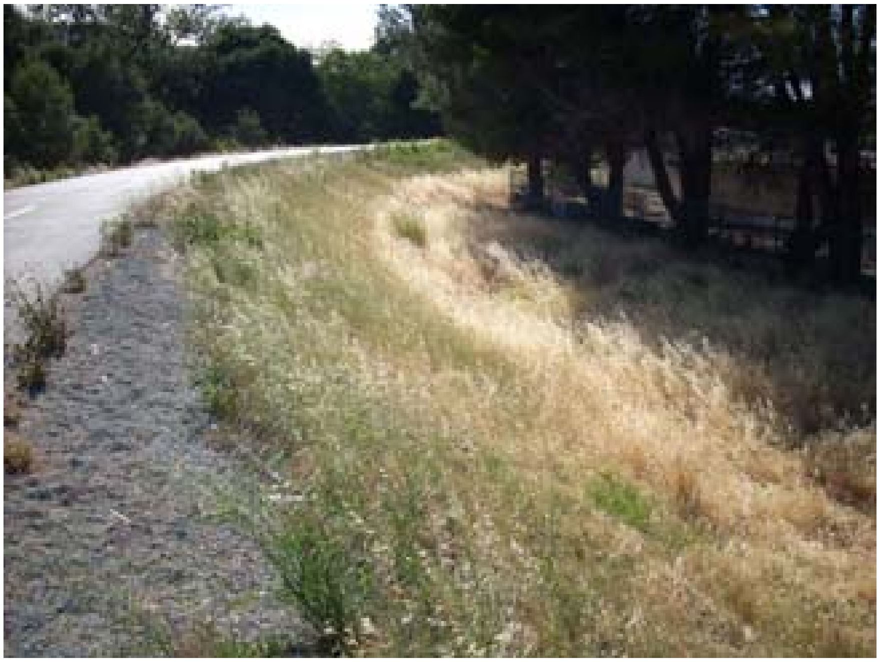
Photograph ID	Approximate Location (Project Station)	Description
074	29+00	South view of outboard levee slope



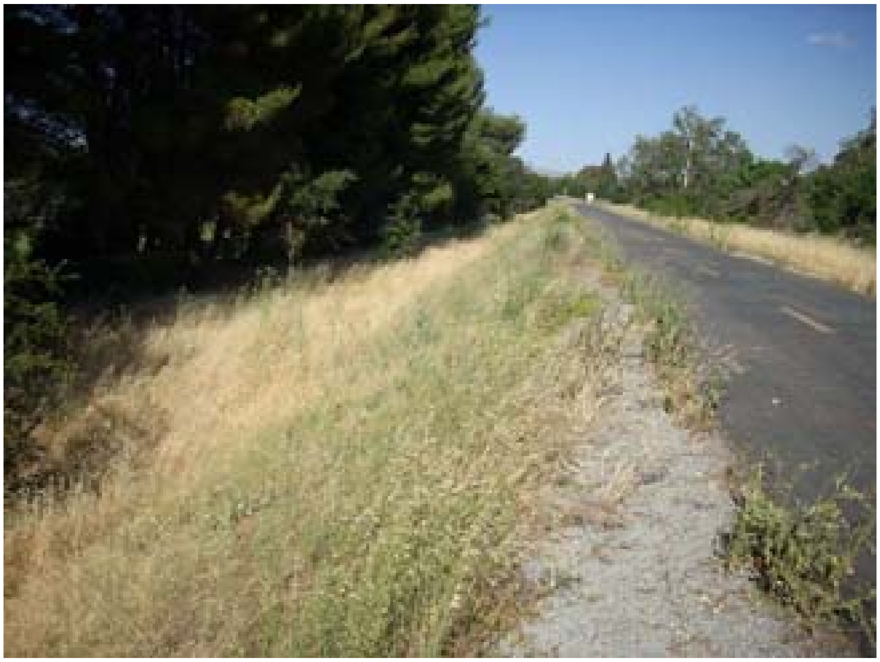
Photograph ID	Approximate Location (Project Station)	Description
075	29+00	South view of inboard levee slope



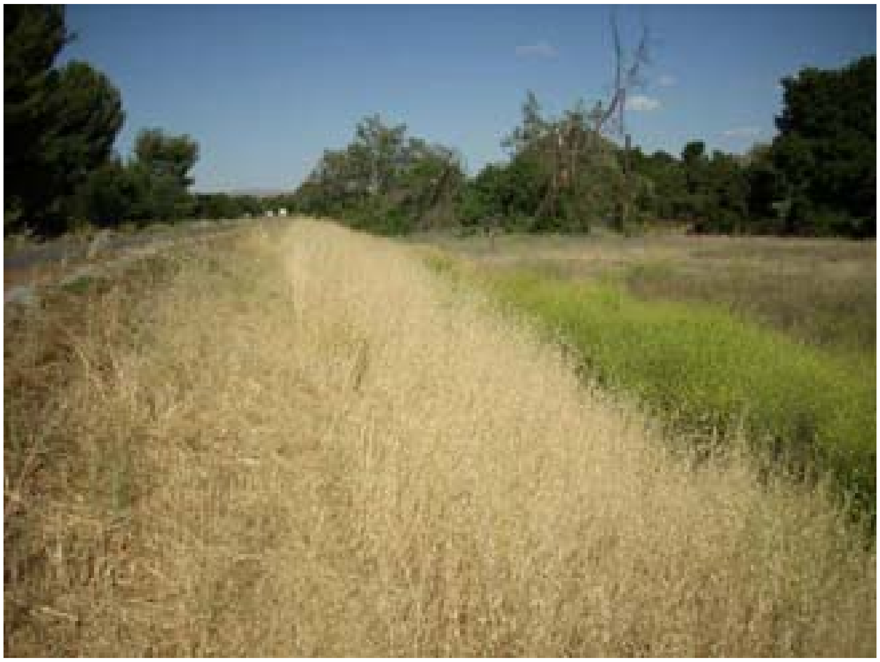
Photograph ID	Approximate Location (Project Station)	Description
076	32+50	North view of inboard levee slope



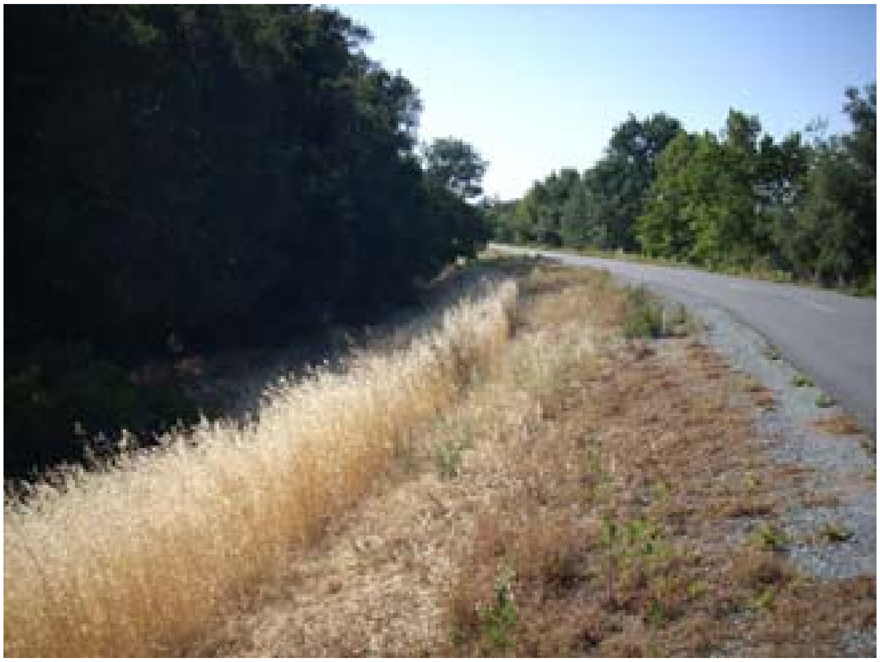
Photograph ID	Approximate Location (Project Station)	Description
077	32+50	North view of outboard levee slope



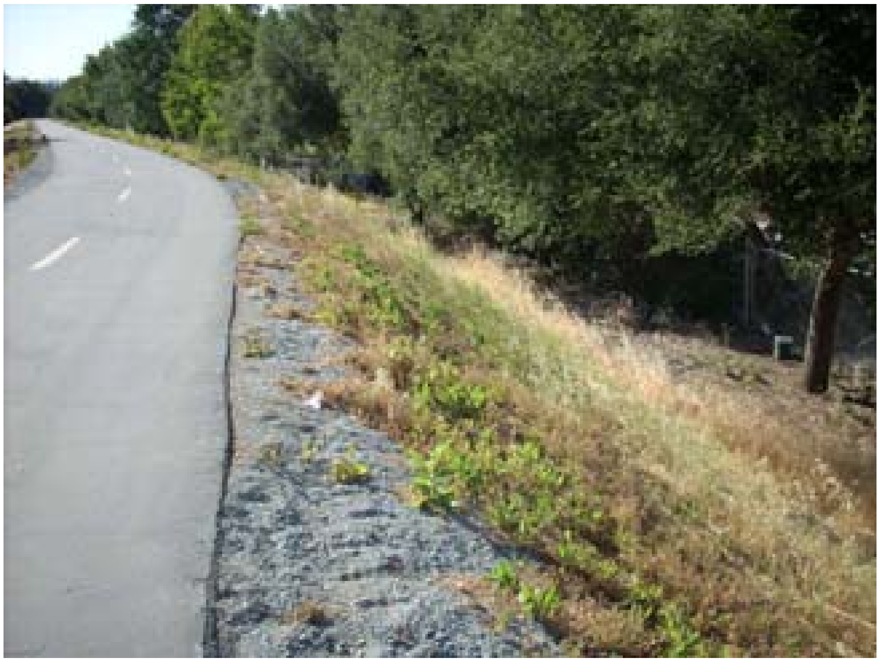
Photograph ID	Approximate Location (Project Station)	Description
078	32+50	South view of outboard levee slope



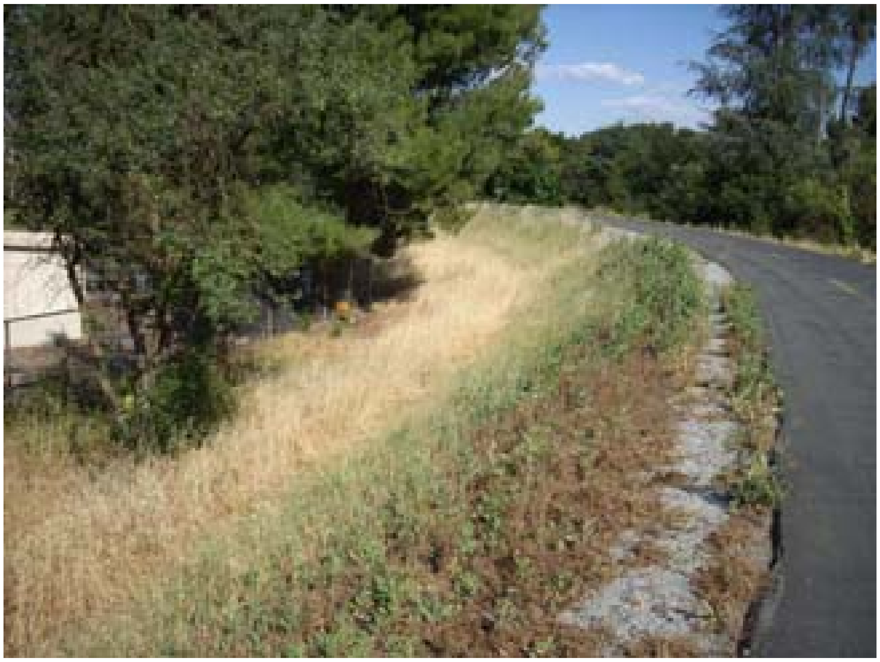
Photograph ID	Approximate Location (Project Station)	Description
079	32+50	South view of inboard levee slope



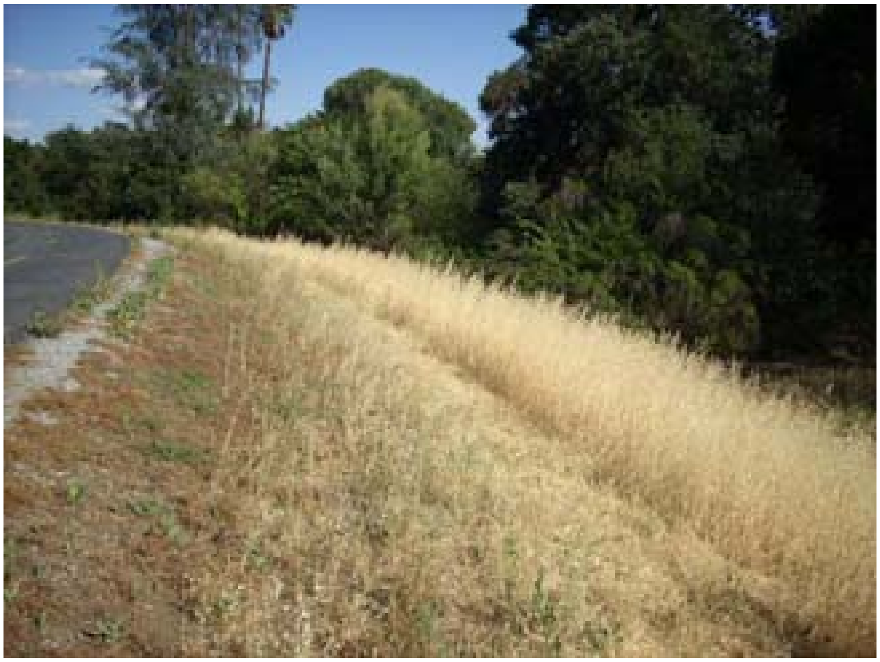
Photograph ID	Approximate Location (Project Station)	Description
080	35+00	North view of inboard levee slope



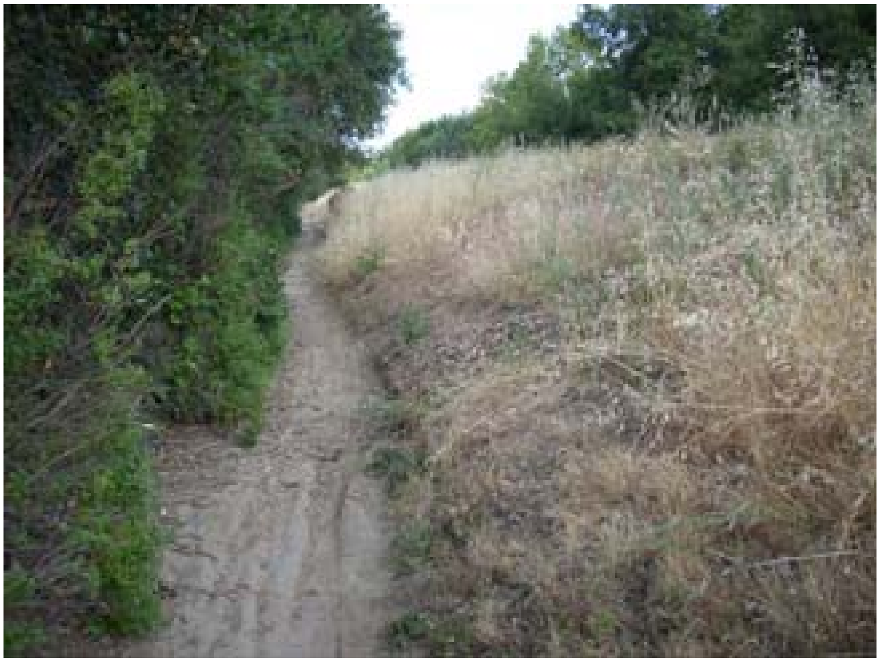
Photograph ID	Approximate Location (Project Station)	Description
081	35+00	North view of outboard levee slope



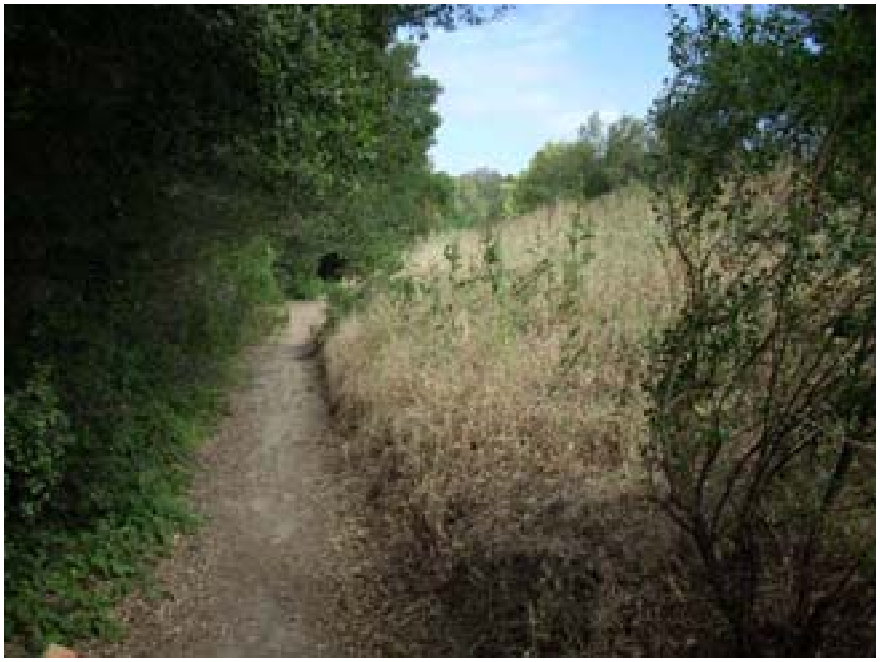
Photograph ID	Approximate Location (Project Station)	Description
082	35+00	South view of outboard levee slope



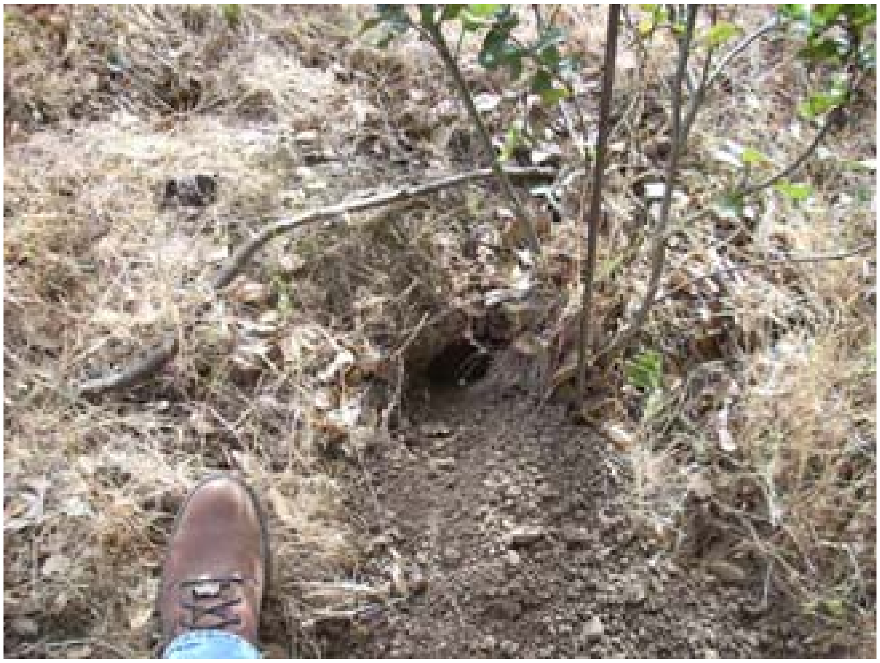
Photograph ID	Approximate Location (Project Station)	Description
083	35+00	South view of inboard levee slope



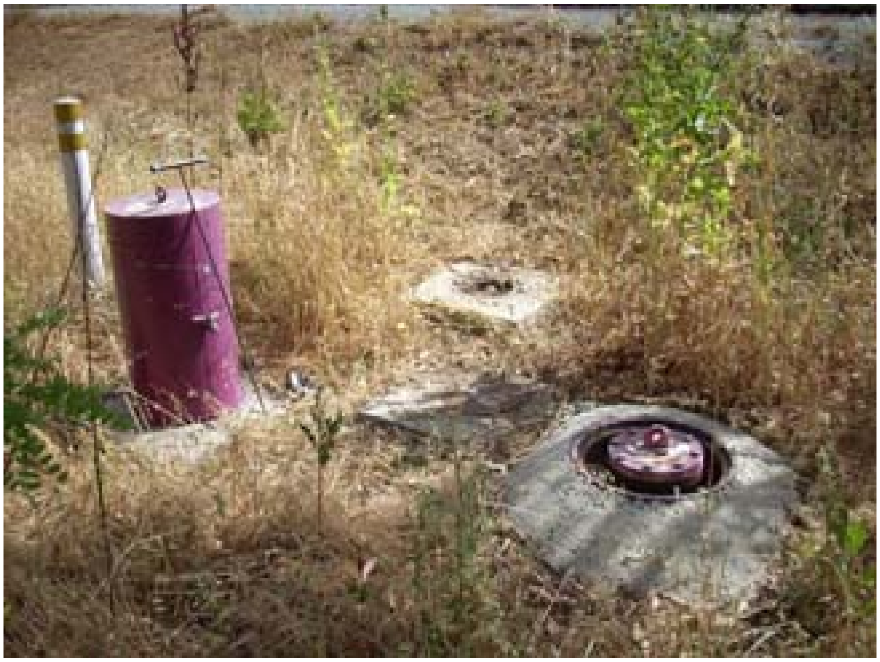
Photograph ID	Approximate Location (Project Station)	Description
084	38+00	Unimproved trail with associated disturbance and erosion at inboard levee toe (north view)



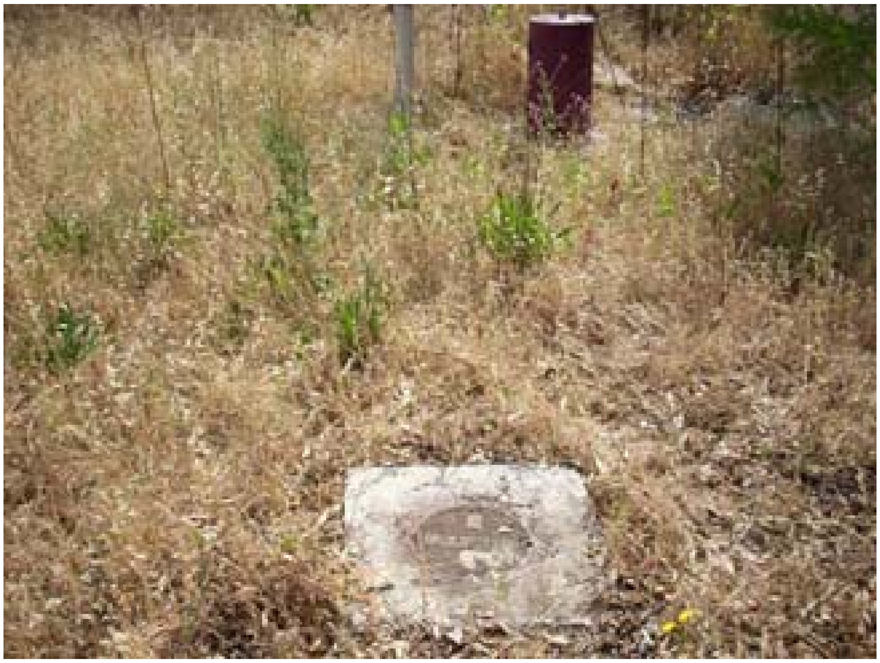
Photograph ID	Approximate Location (Project Station)	Description
085	47+00	Unimproved trail with associated disturbance and erosion at inboard levee toe (north view)



Photograph ID	Approximate Location (Project Station)	Description
086	50+50	Ground squirrel burrow near inboard levee toe

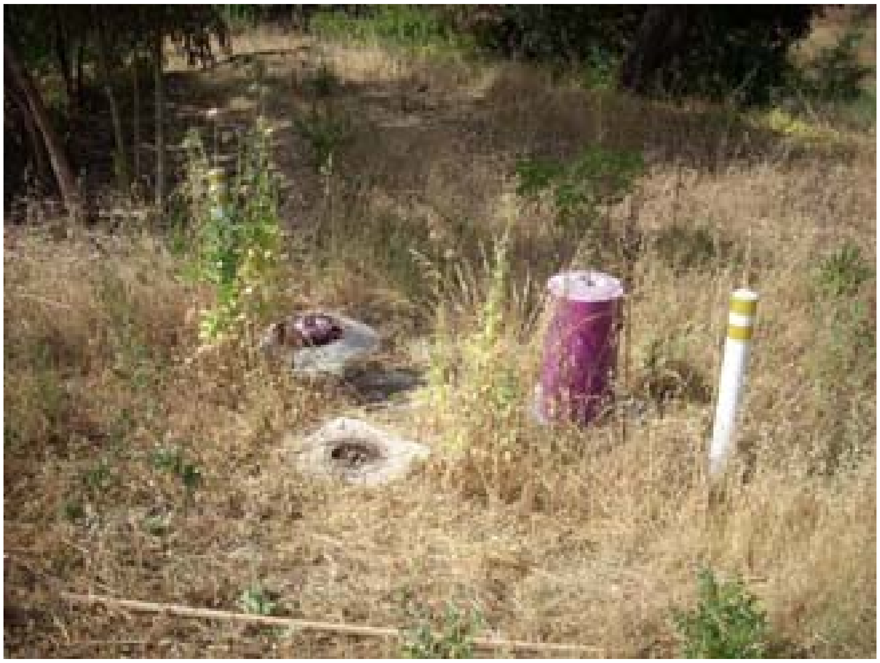


Photograph ID	Approximate Location (Project Station)	Description
087	58+30	Recycled water pipeline appurtenances on inboard side of levee

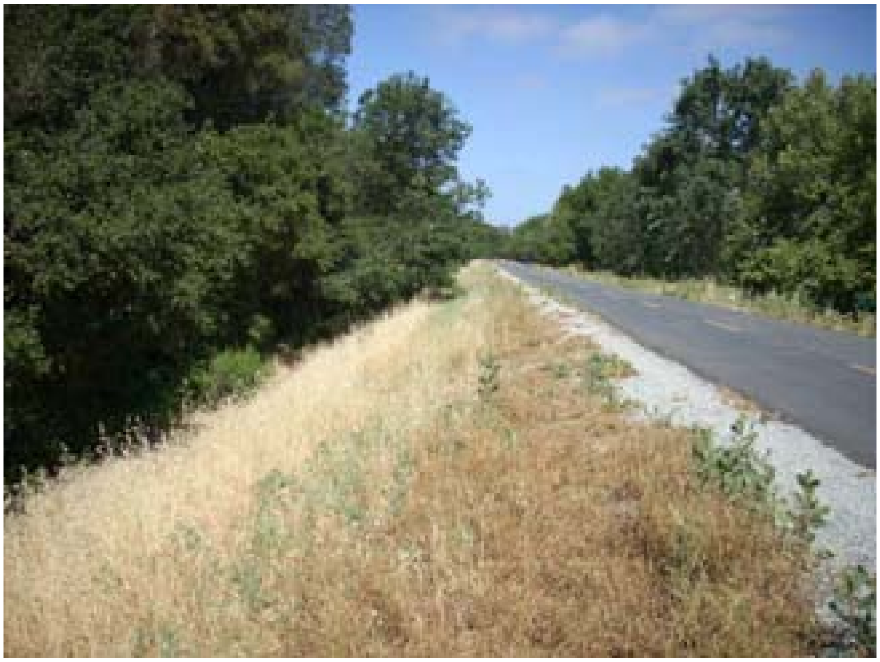


Photograph ID	Approximate Location (Project Station)	Description
088	58+30	Recycled water pipeline appurtenances on inboard side of levee

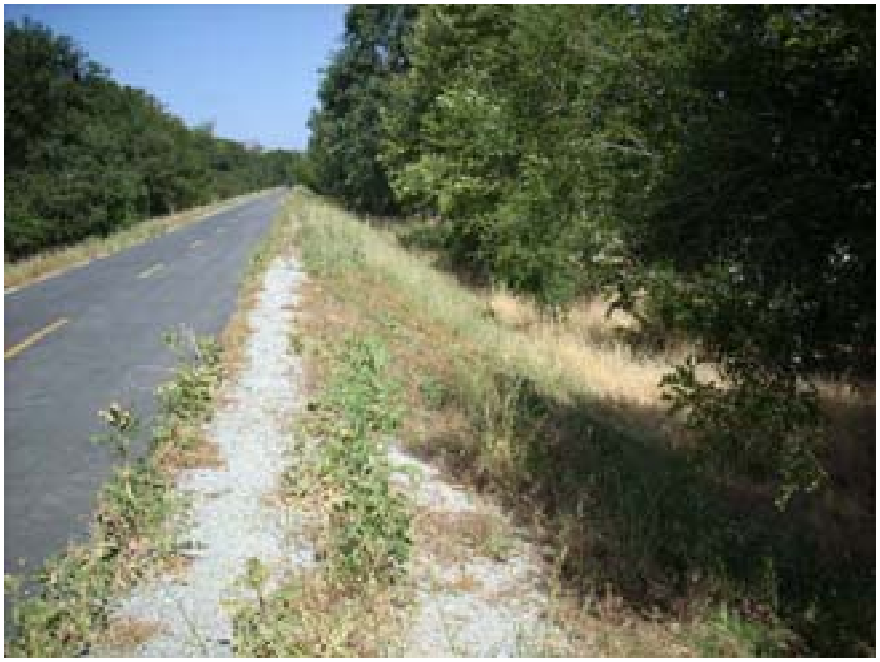
Photograph ID	Approximate Location (Project Station)	Description
089	58+30	Recycled water pipeline appurtenances on inboard side of levee



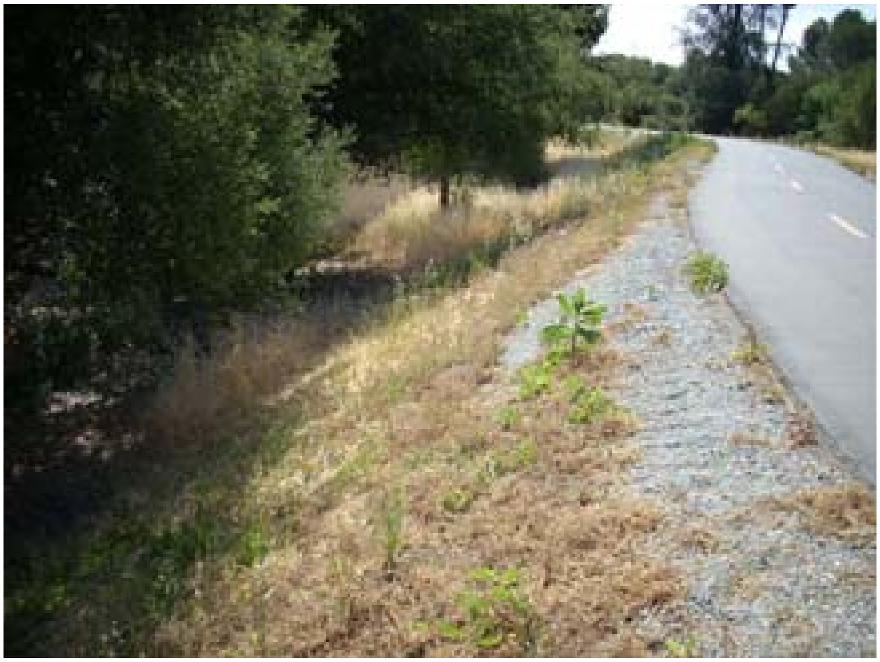
Photograph ID	Approximate Location (Project Station)	Description
090	58+30	Recycled water pipeline appurtenances on inboard side of levee



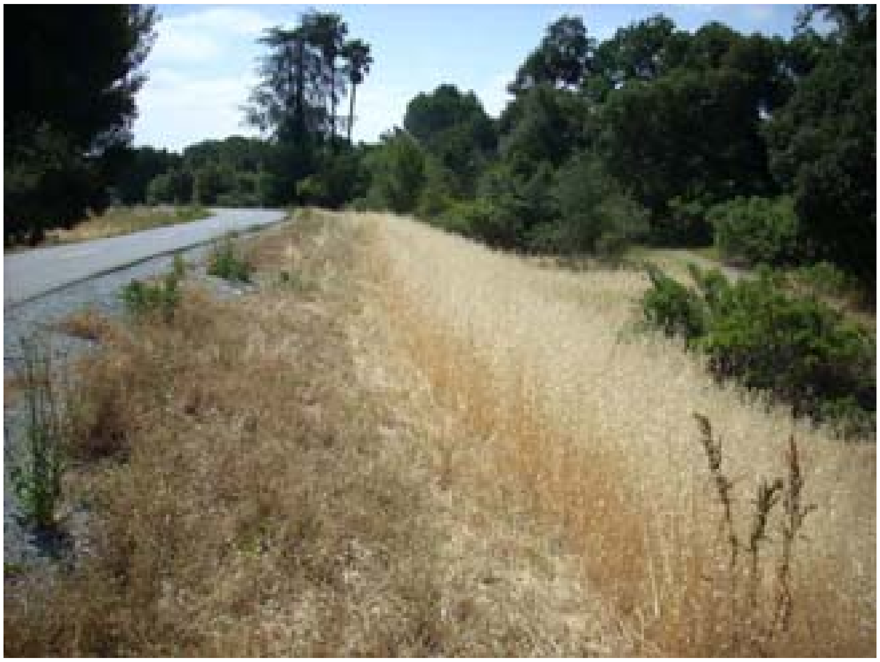
Photograph ID	Approximate Location (Project Station)	Description
091	36+00	North view of inboard levee slope



Photograph ID	Approximate Location (Project Station)	Description
092	36+00	North view of outboard levee slope



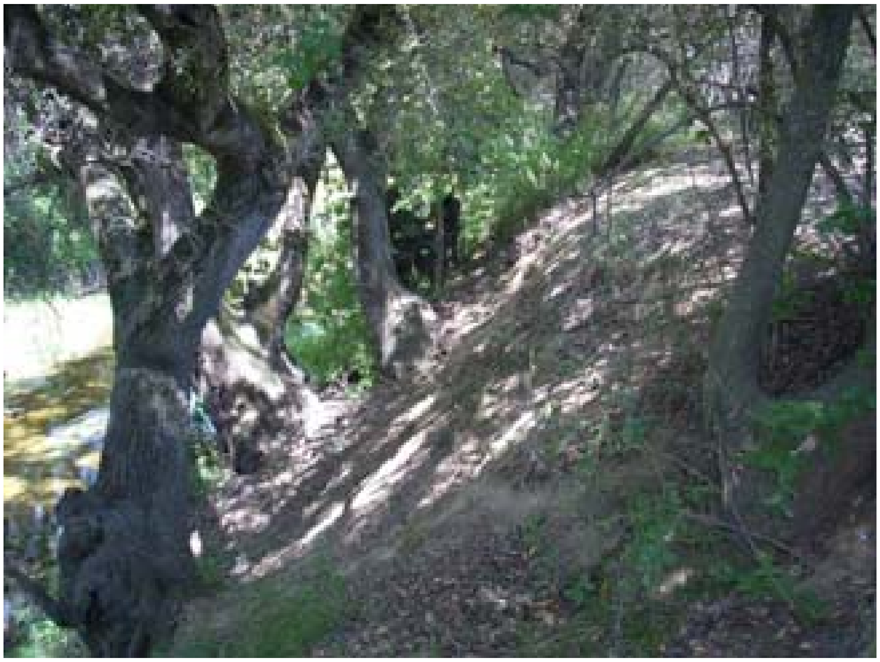
Photograph ID	Approximate Location (Project Station)	Description
093	36+00	South view of outboard levee slope



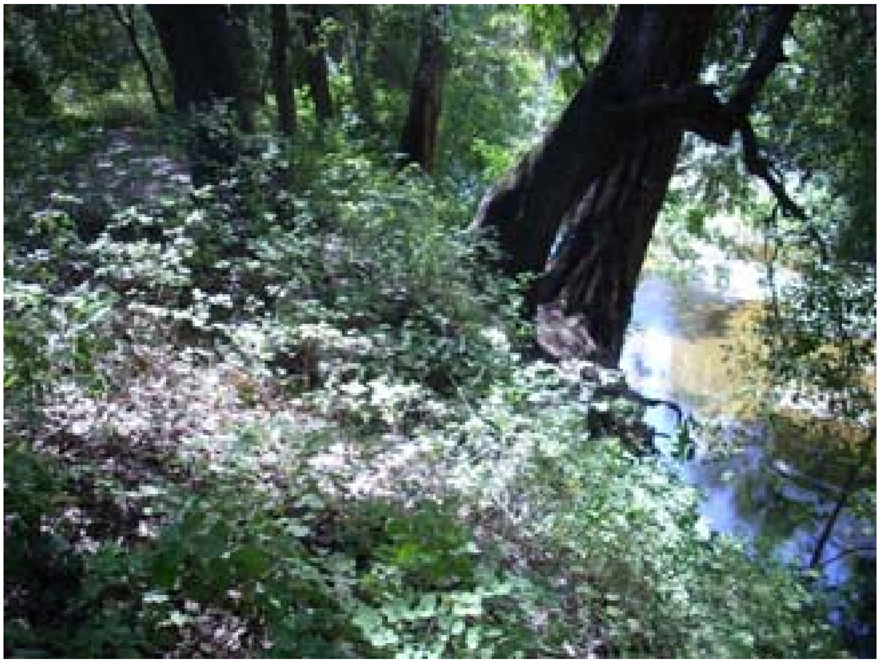
Photograph ID	Approximate Location (Project Station)	Description
094	36+00	South view of inboard levee slope

Photograph ID	Approximate Location (Project Station)	Description
095	38+00	Steep stream bank slopes about 30' from inboard toe of levee

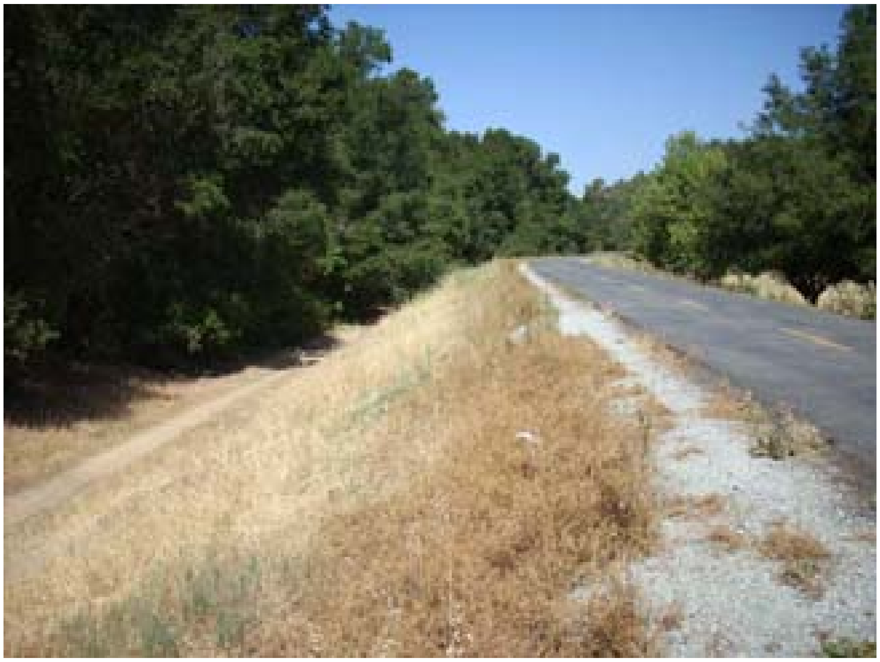
Photograph ID	Approximate Location (Project Station)	Description
096	38+00	Steep stream bank slopes about 30' from inboard toe of levee



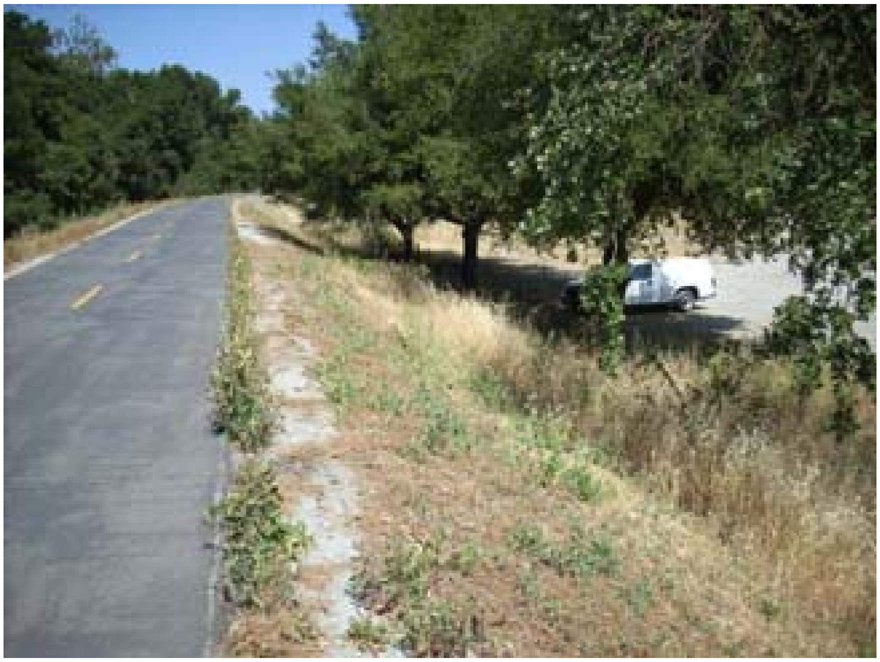
Photograph ID	Approximate Location (Project Station)	Description
097	45+00	Steep stream bank slopes about 30’ from inboard toe of levee



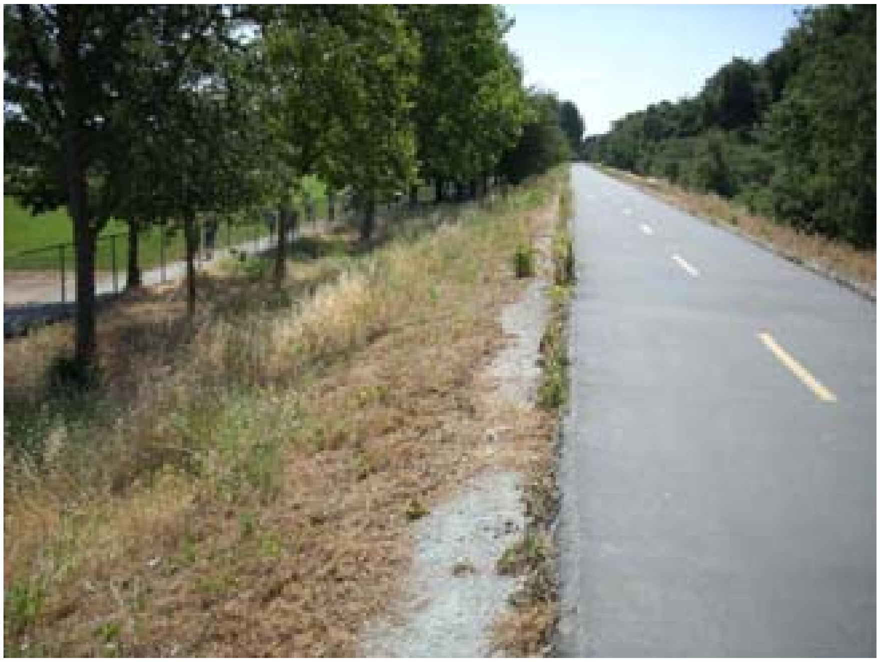
Photograph ID	Approximate Location (Project Station)	Description
098	45+00	Steep stream bank slopes about 30’ from inboard toe of levee



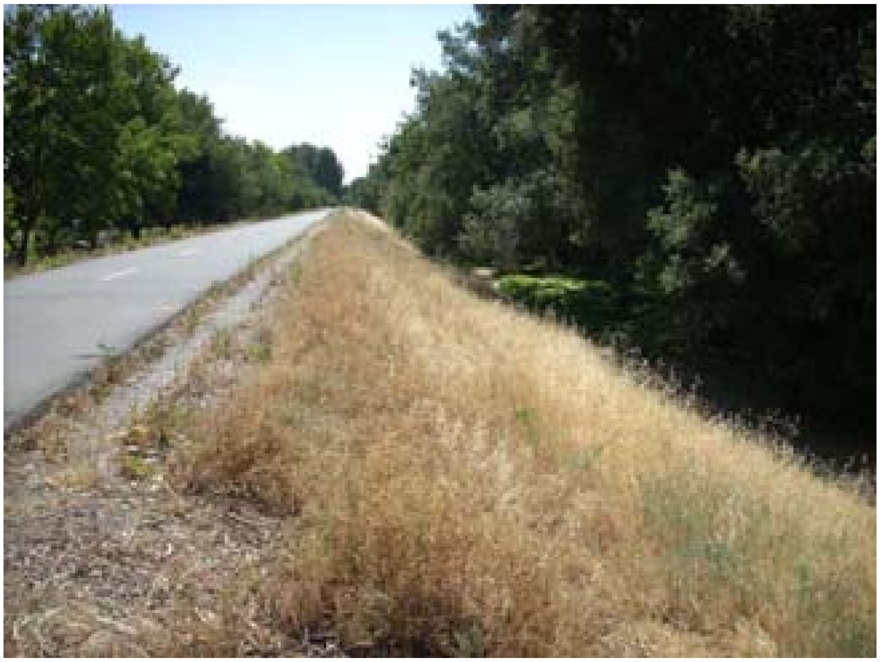
Photograph ID	Approximate Location (Project Station)	Description
099	45+50	North view of inboard levee slope



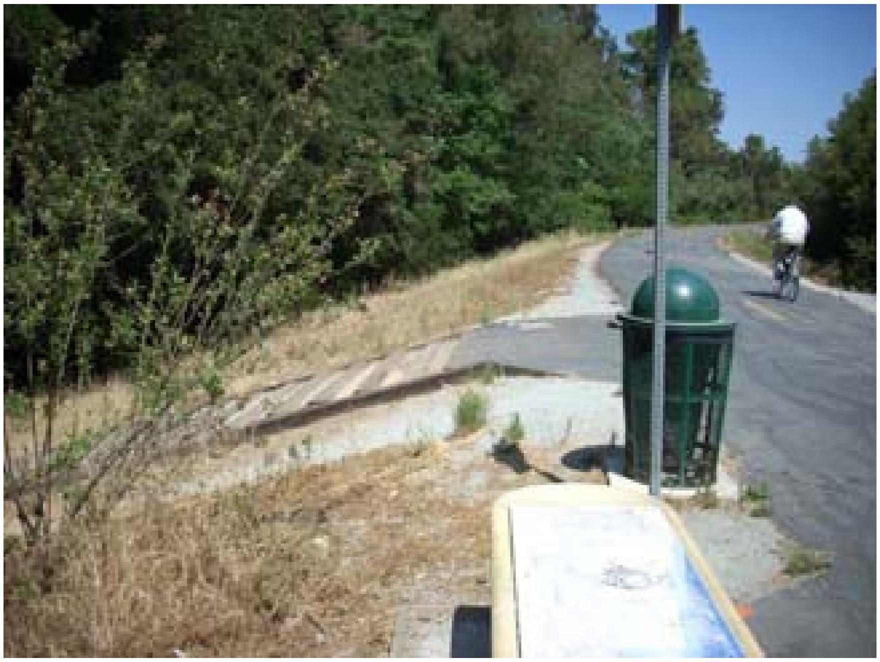
Photograph ID	Approximate Location (Project Station)	Description
100	45+50	North view of outboard levee slope



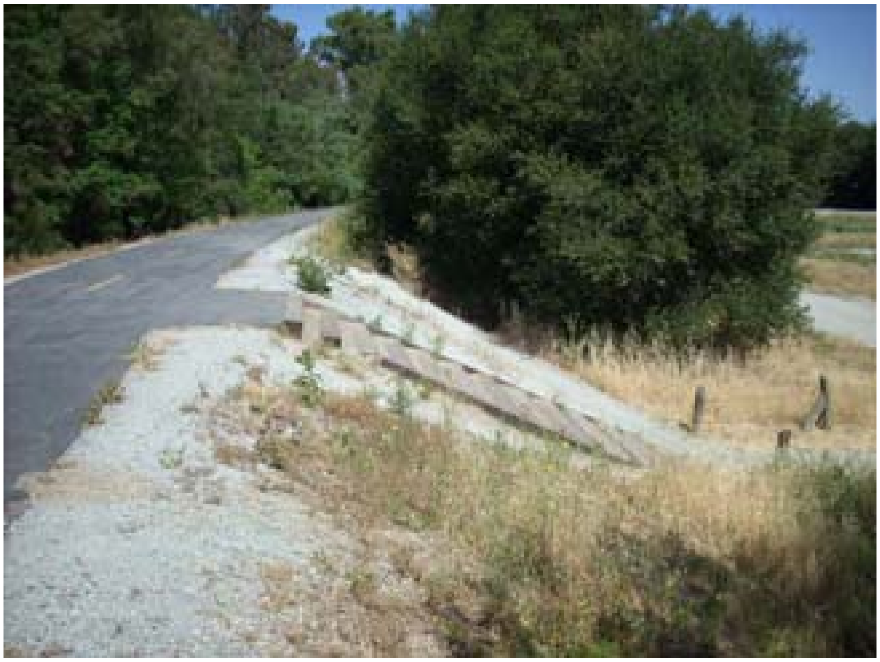
Photograph ID	Approximate Location (Project Station)	Description
101	45+50	South view of outboard levee slope



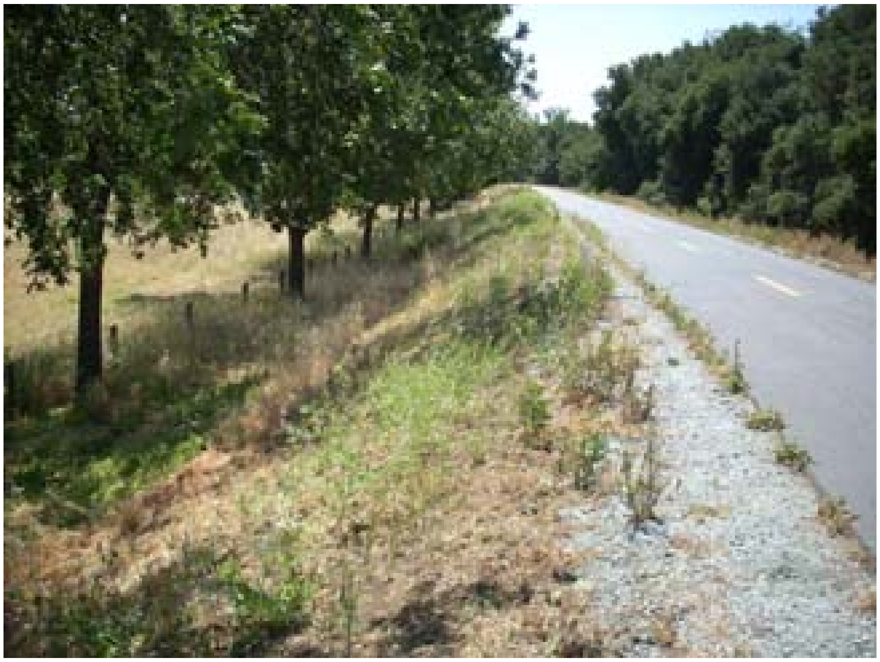
Photograph ID	Approximate Location (Project Station)	Description
102	45+50	South view of inboard levee slope



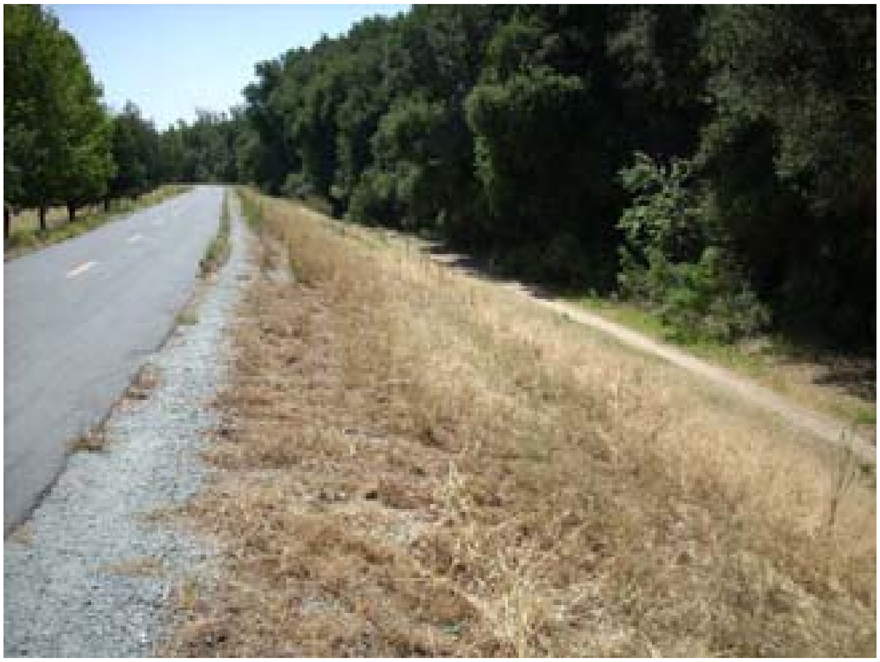
Photograph ID	Approximate Location (Project Station)	Description
103	53+00	North view of inboard levee slope



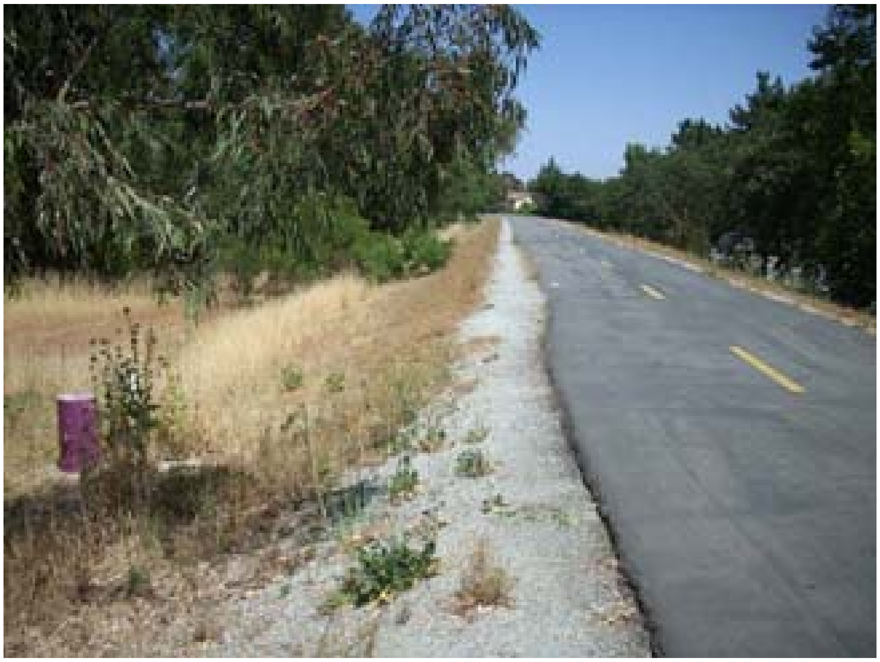
Photograph ID	Approximate Location (Project Station)	Description
104	53+00	North view of outboard levee slope



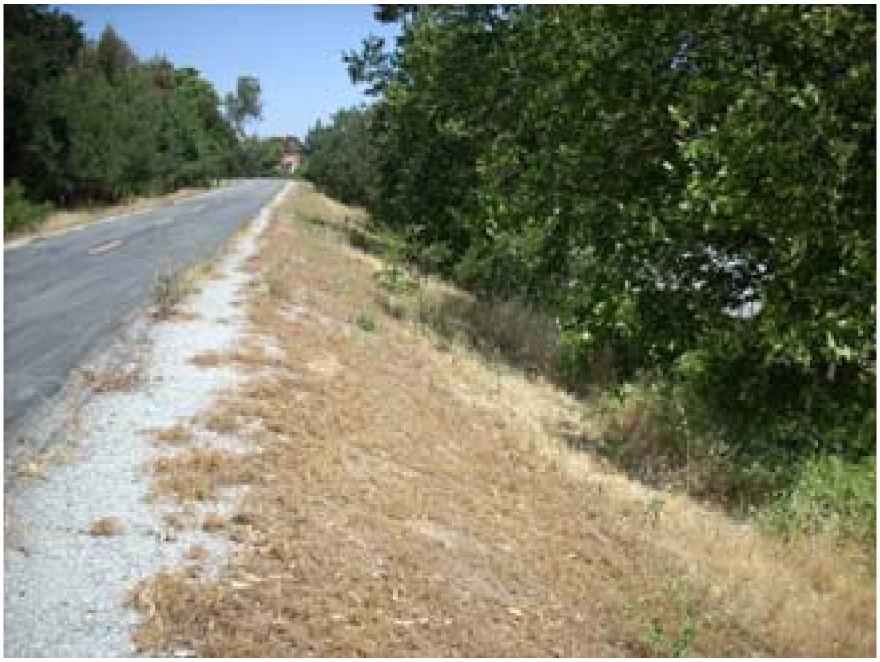
Photograph ID	Approximate Location (Project Station)	Description
105	53+00	South view of outboard levee slope



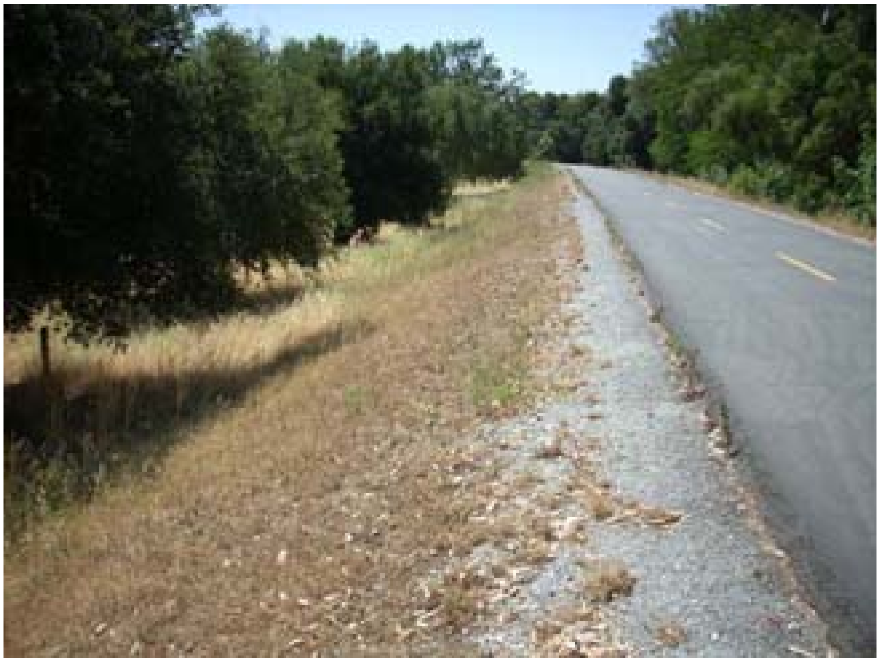
Photograph ID	Approximate Location (Project Station)	Description
106	53+00	South view of inboard levee slope



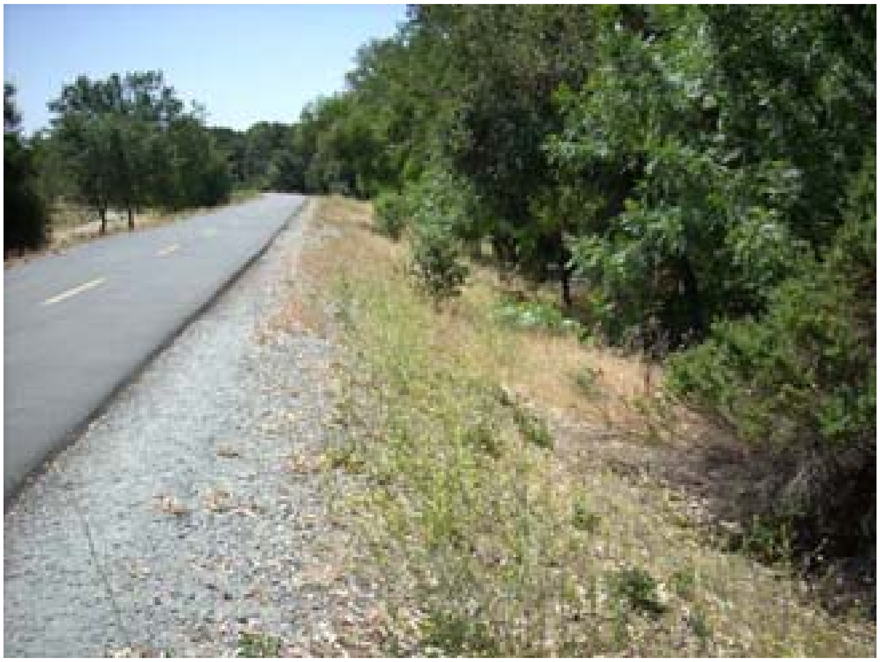
Photograph ID	Approximate Location (Project Station)	Description
107	58+00	North view of inboard levee slope



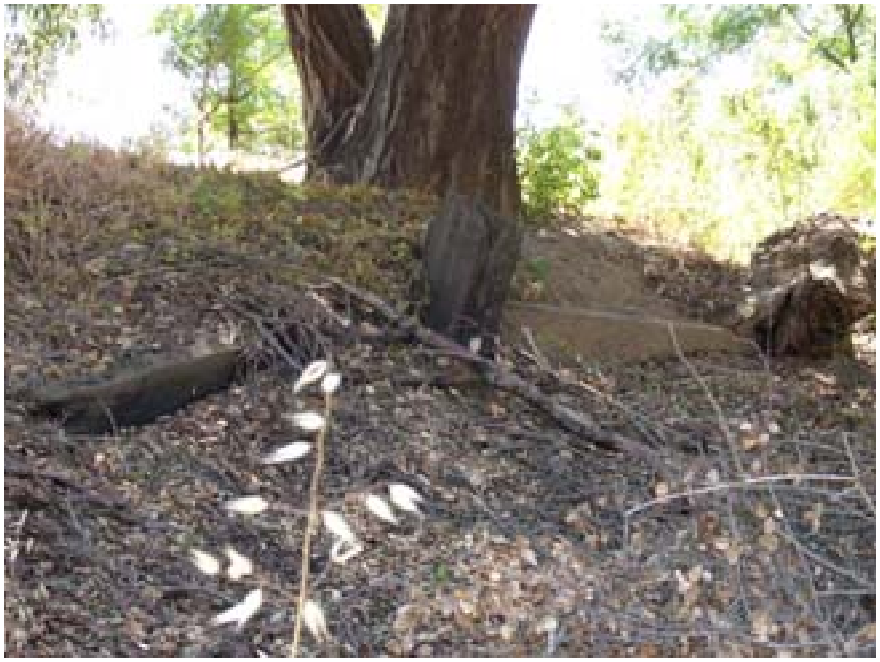
Photograph ID	Approximate Location (Project Station)	Description
108	58+00	North view of outboard levee slope



Photograph ID	Approximate Location (Project Station)	Description
109	58+00	South view of outboard levee slope

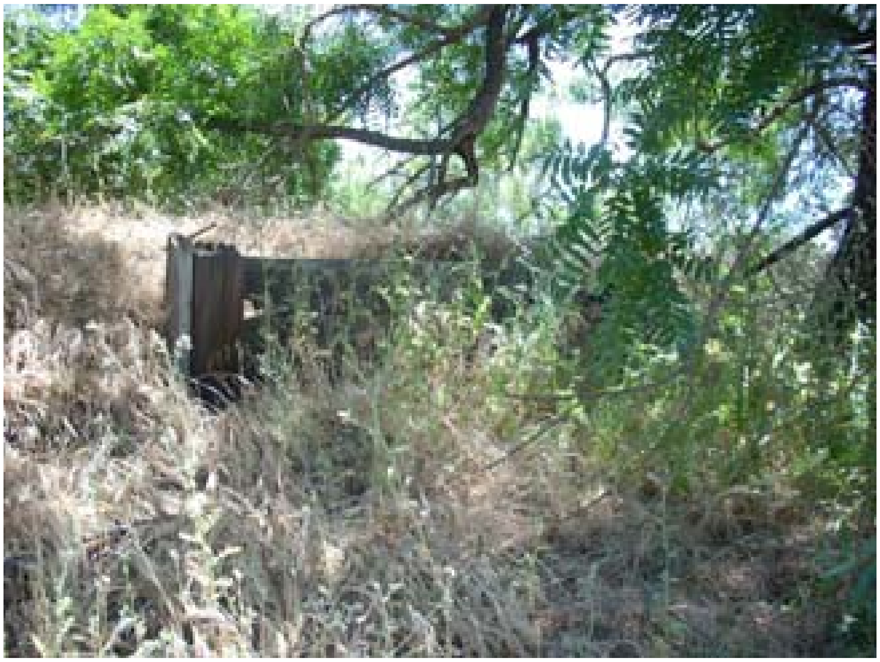


Photograph ID	Approximate Location (Project Station)	Description
110	58+00	South view of inboard levee slope

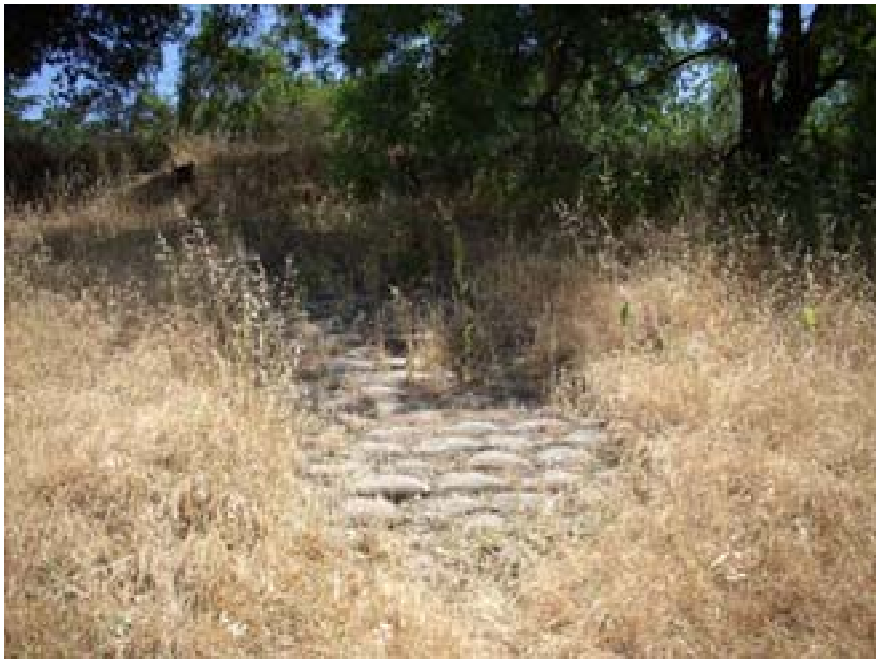


Photograph ID	Approximate Location (Project Station)	Description
111	58+00	Old flood wall on inboard levee slope (abandoned)

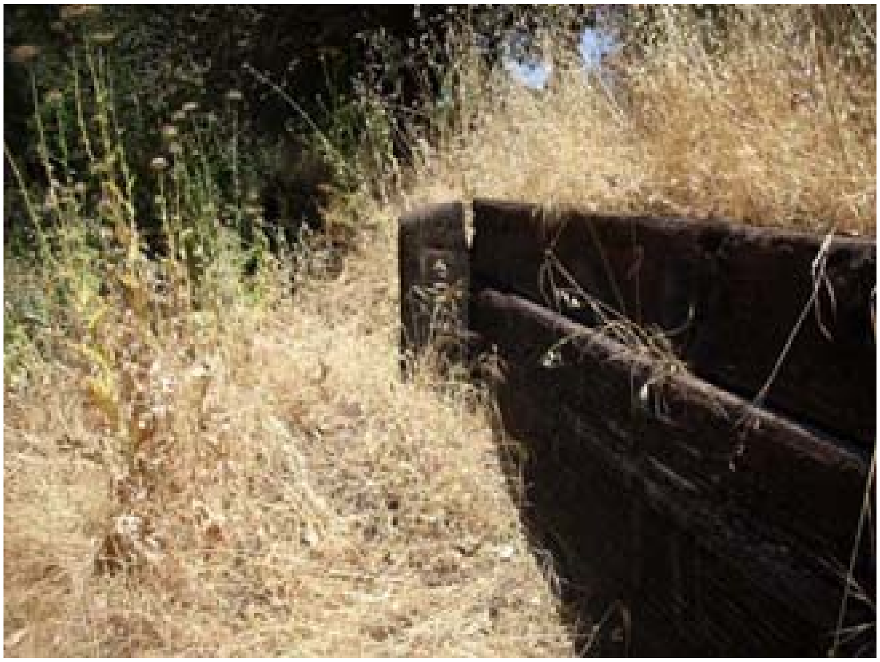
Photograph ID	Approximate Location (Project Station)	Description
112	59+00	Old flood wall on inboard levee slope (abandoned)



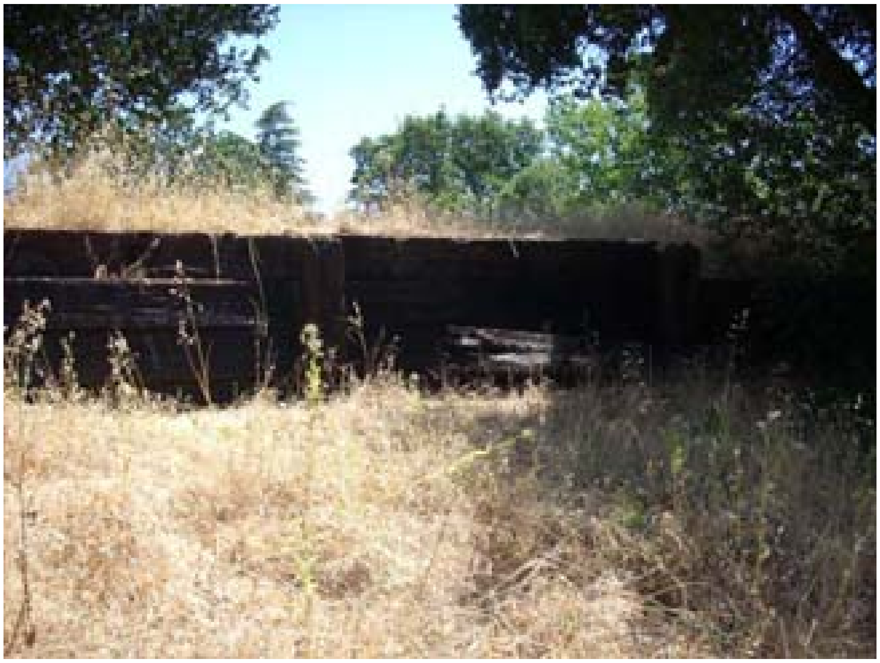
Photograph ID	Approximate Location (Project Station)	Description
113	59+00	Old flood wall on inboard levee slope (abandoned)



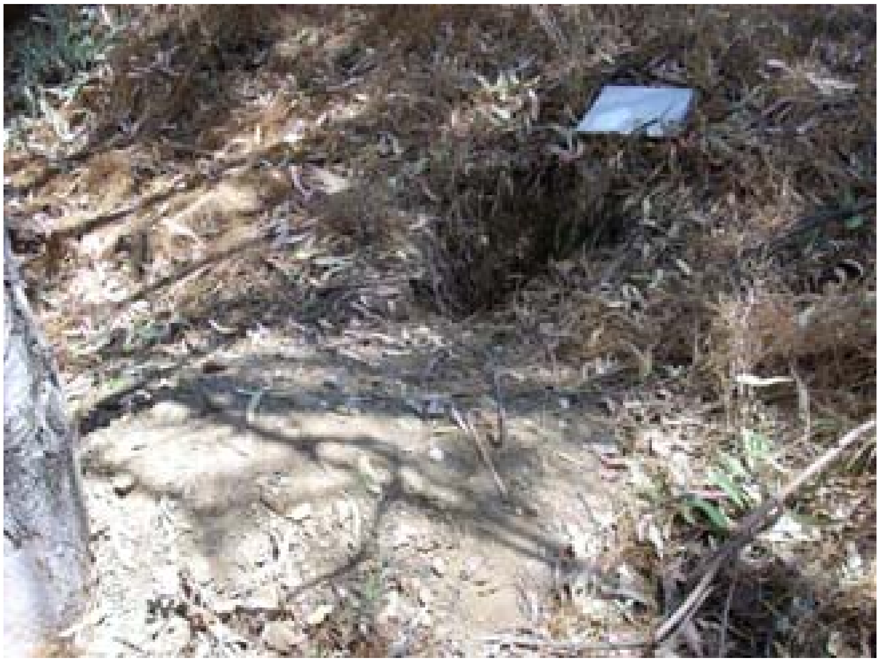
Photograph ID	Approximate Location (Project Station)	Description
114	59+00	Concrete sack apron, no culvert (abandoned?)



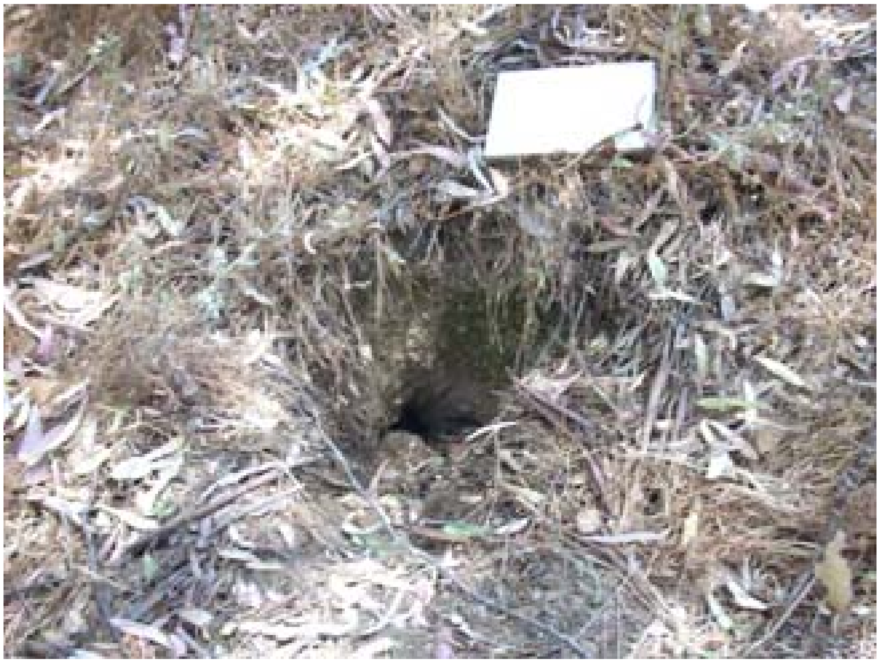
Photograph ID	Approximate Location (Project Station)	Description
115	60+00	Old flood wall on inboard levee slope (abandoned)



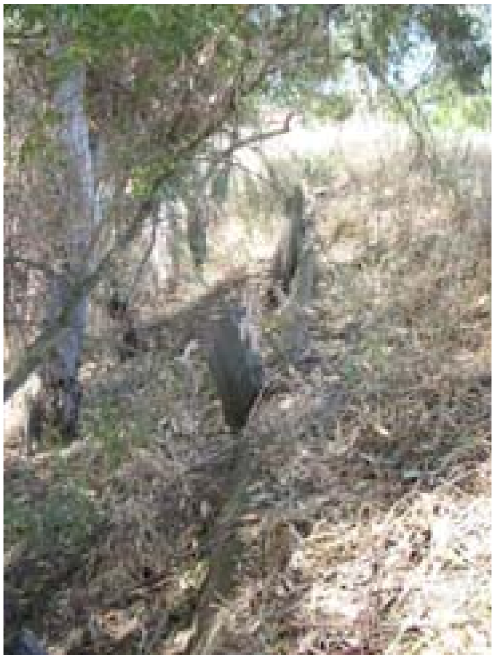
Photograph ID	Approximate Location (Project Station)	Description
116	60+00	Old flood wall on inboard levee slope (abandoned)



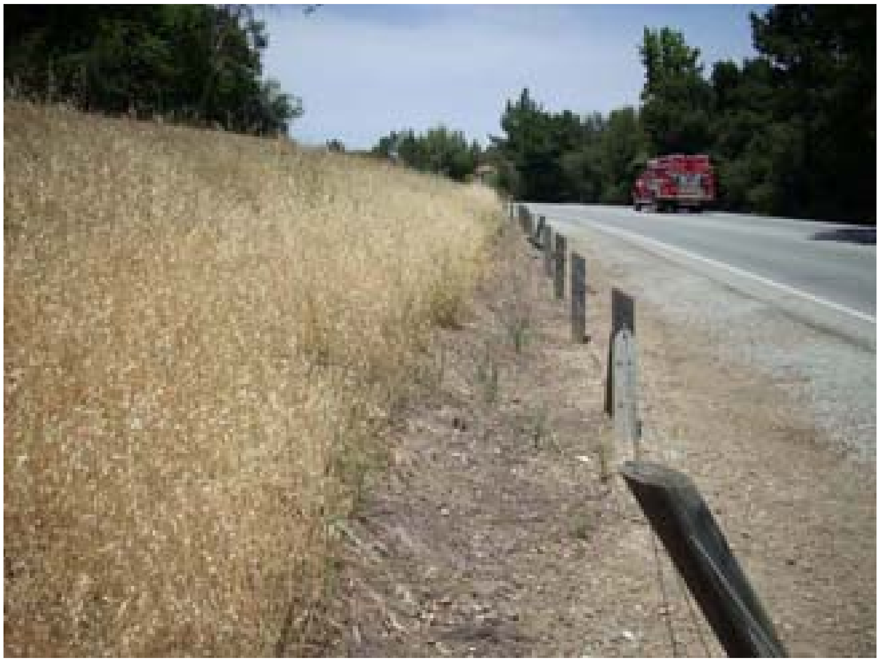
Photograph ID	Approximate Location (Project Station)	Description
117	62+50	Ground squirrel burrow on inboard slope of old levee



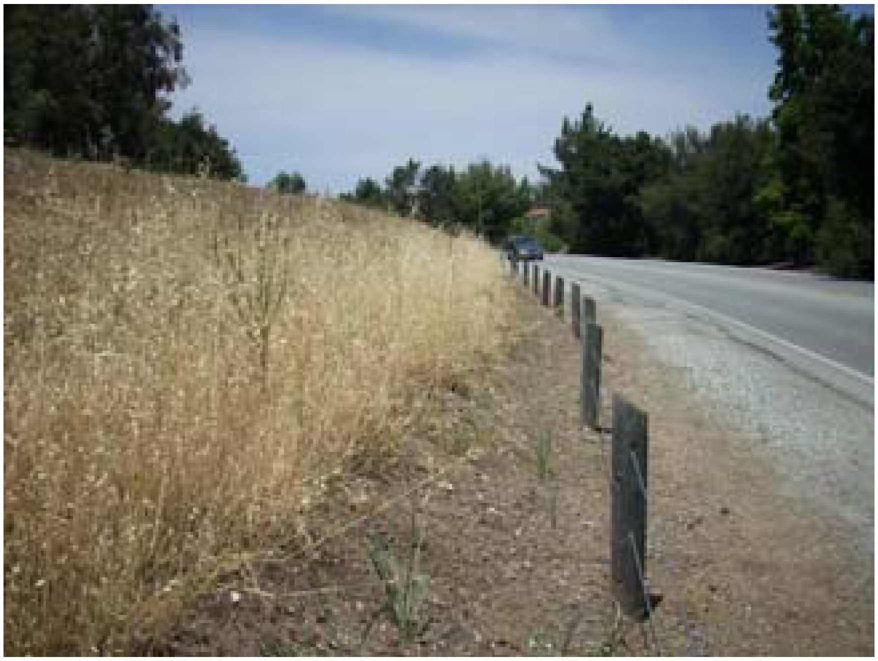
Photograph ID	Approximate Location (Project Station)	Description
118	62+50	Ground squirrel burrow on inboard slope of old levee



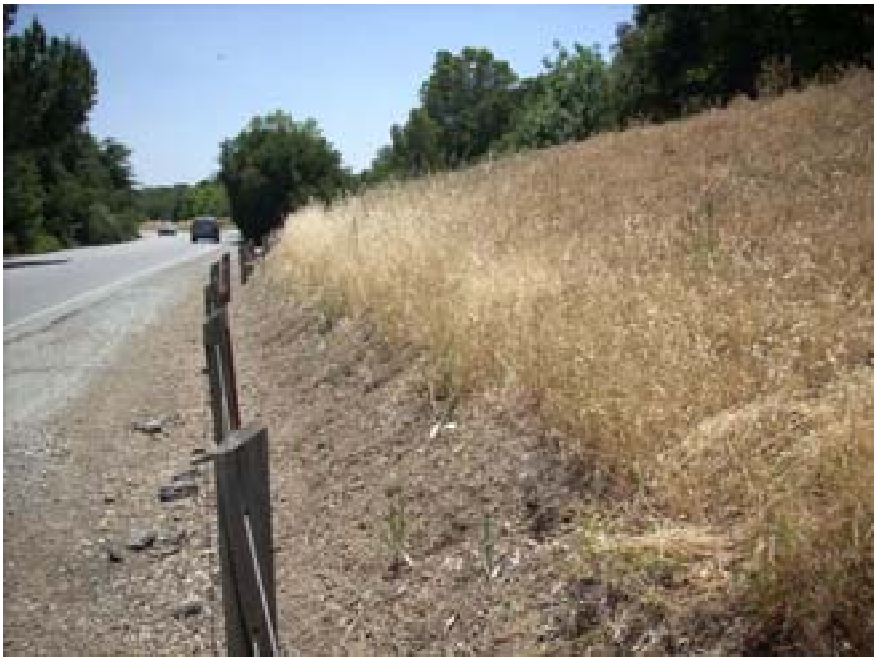
Photograph ID	Approximate Location (Project Station)	Description
119	67+00	Old flood wall on inboard levee slope (abandoned)



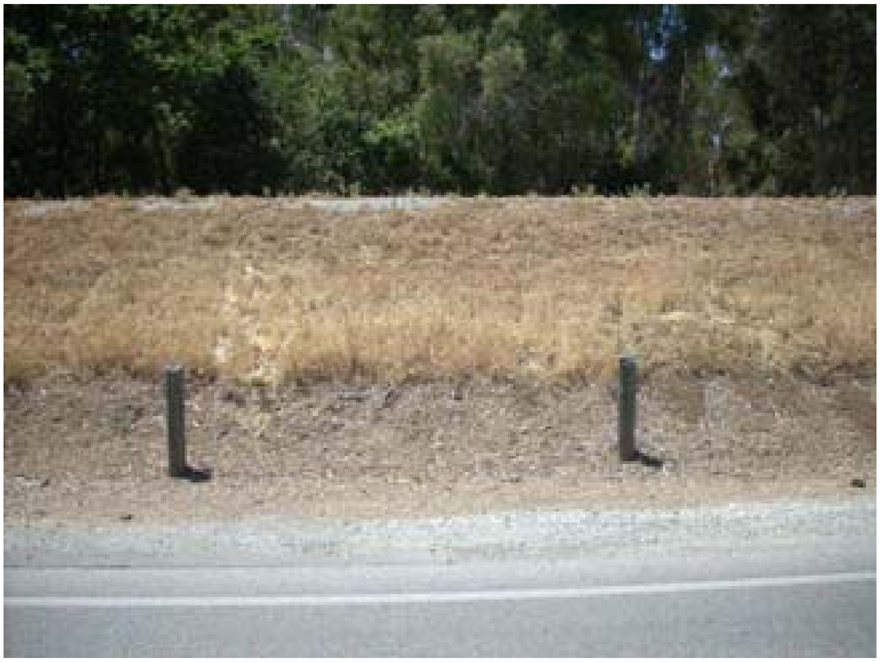
Photograph ID	Approximate Location (Project Station)	Description
120	60+50	Erosion and oversteepening of outboard levee toe adjacent to roadway shoulder, north view



Photograph ID	Approximate Location (Project Station)	Description
121	62+00	Erosion and oversteepening of outboard levee toe adjacent to roadway shoulder, north view

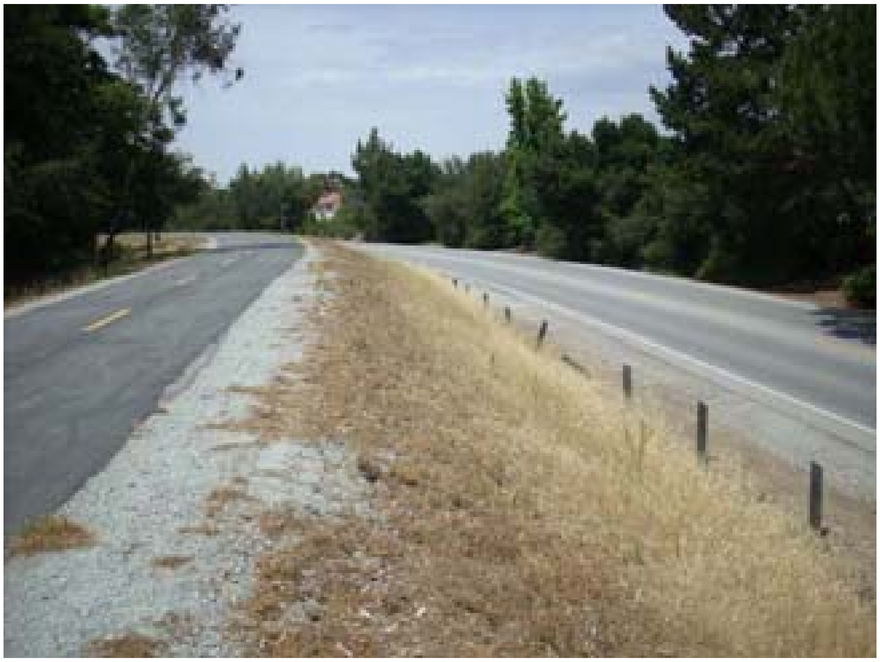


Photograph ID	Approximate Location (Project Station)	Description
122	63+00	Erosion and oversteepening of outboard levee toe adjacent to roadway shoulder, south view

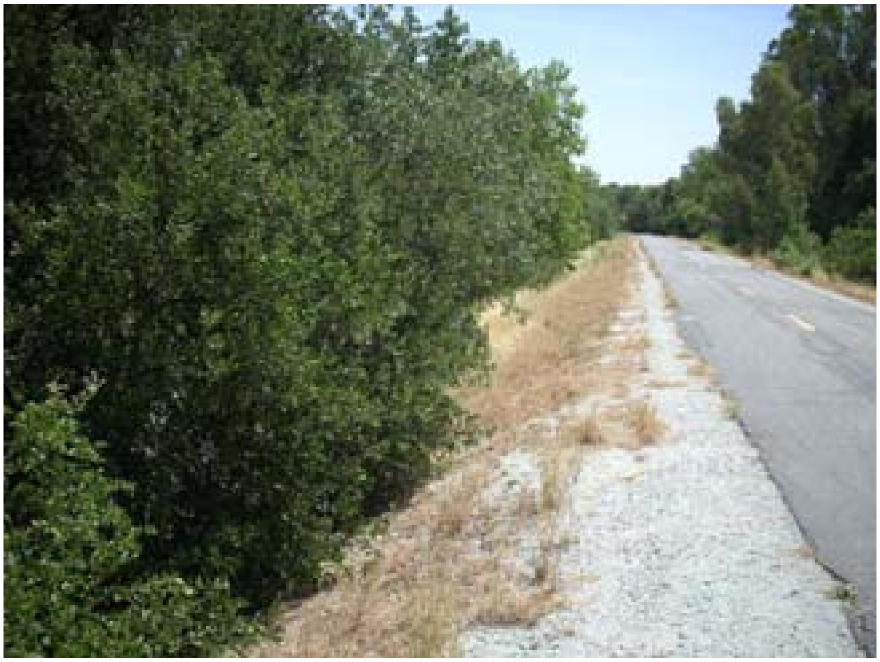


Photograph ID	Approximate Location (Project Station)	Description
123	63+00	Erosion and oversteepening of outboard levee toe adjacent to roadway shoulder, west view

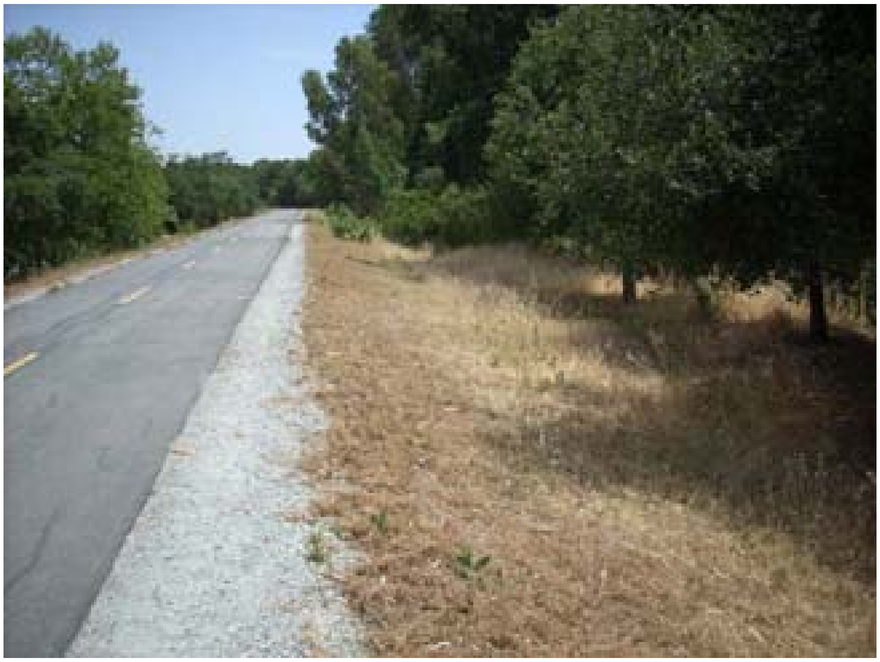
Photograph ID	Approximate Location (Project Station)	Description
124	60+50	North view of inboard levee slope



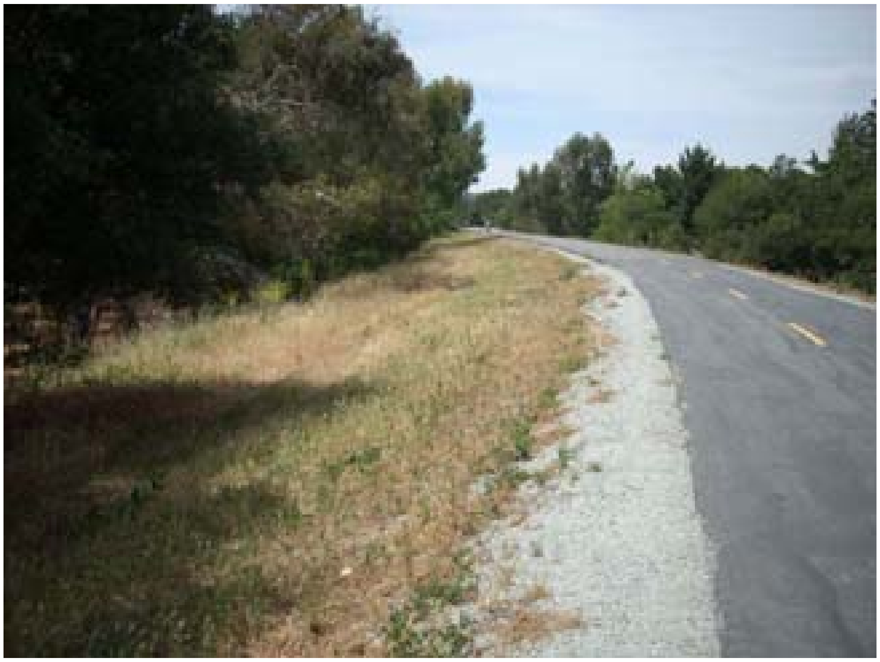
Photograph ID	Approximate Location (Project Station)	Description
125	60+50	North view of outboard levee slope



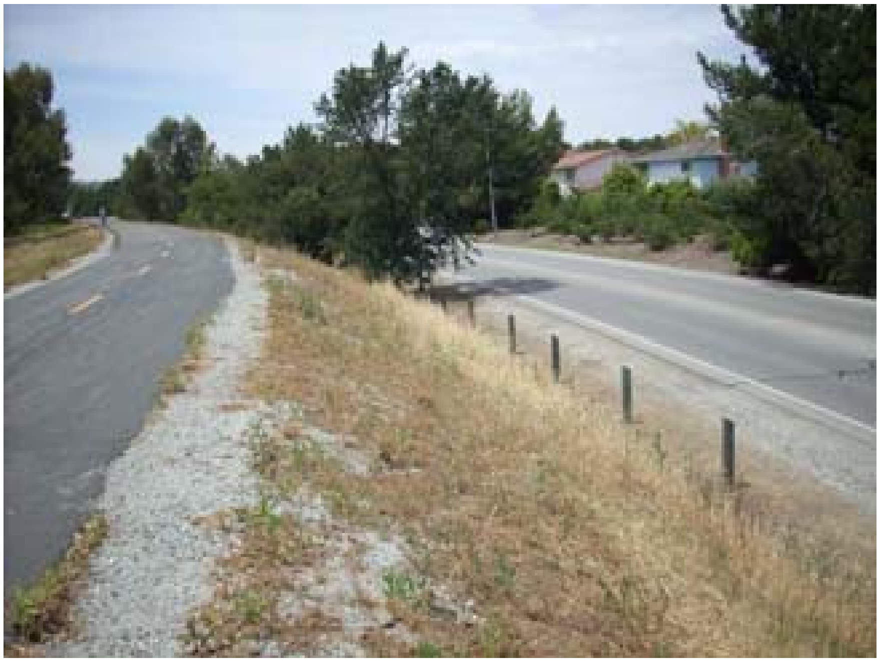
Photograph ID	Approximate Location (Project Station)	Description
126	60+50	South view of outboard levee slope



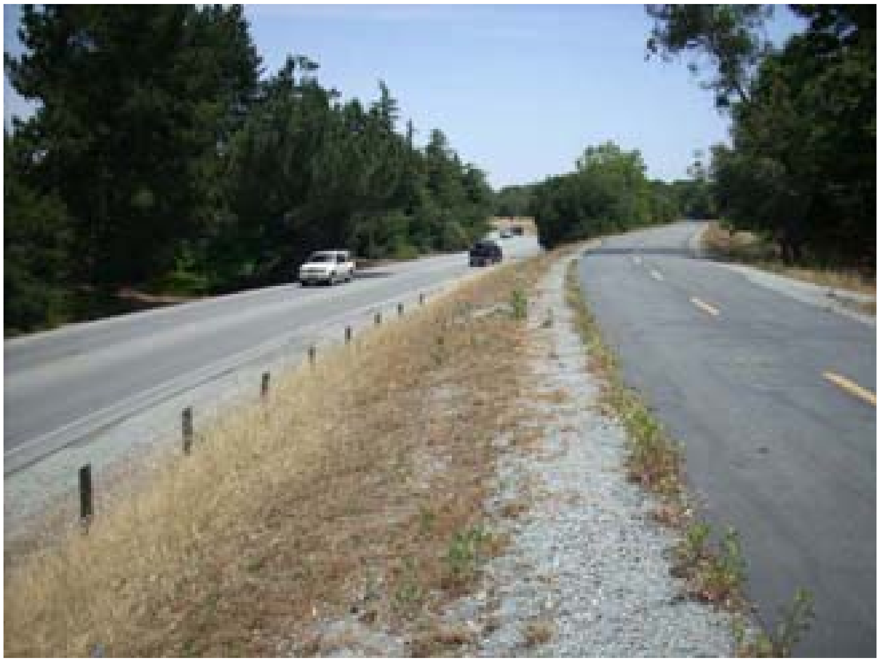
Photograph ID	Approximate Location (Project Station)	Description
127	60+50	South view of inboard levee slope



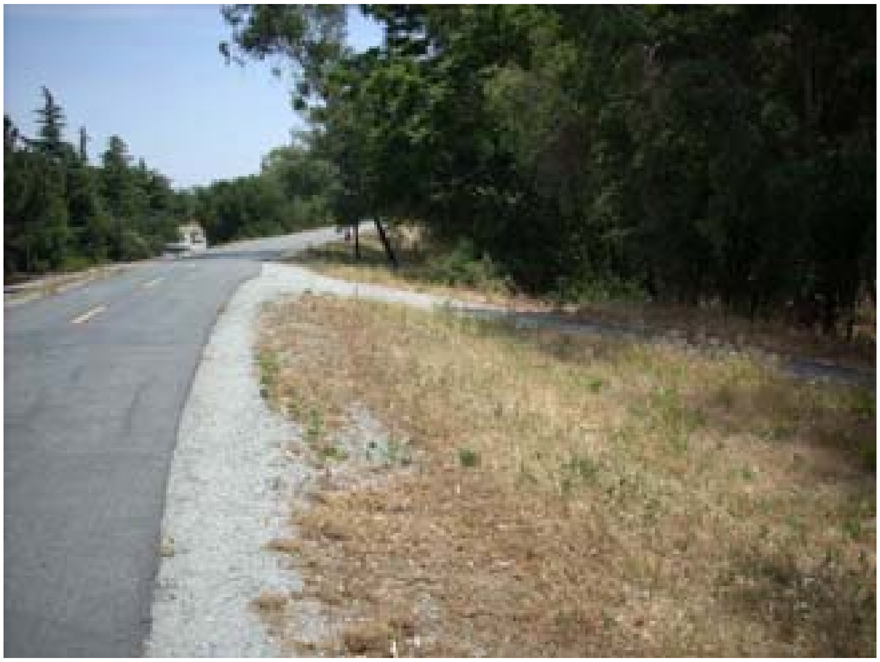
Photograph ID	Approximate Location (Project Station)	Description
128	63+00	North view of inboard levee slope



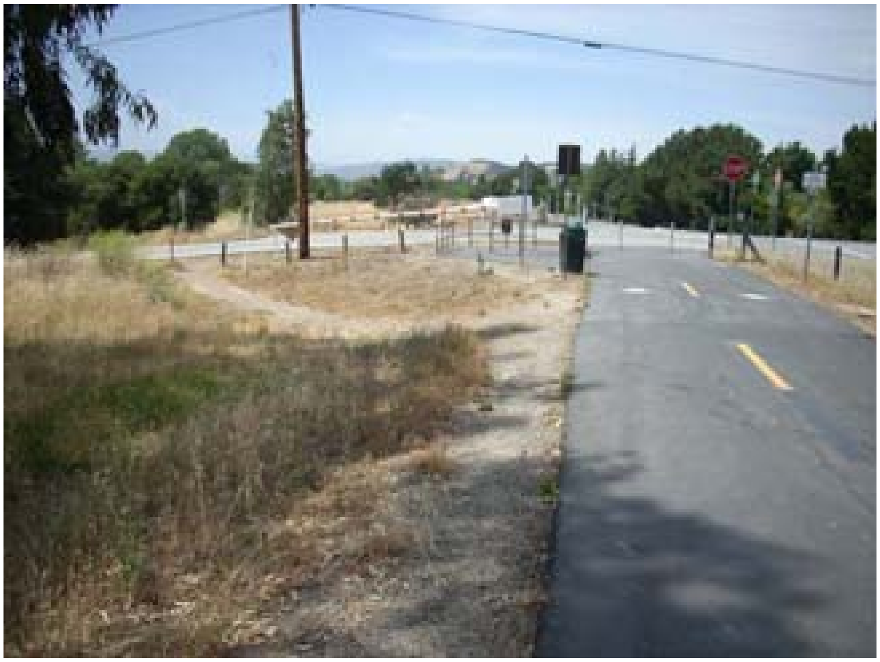
Photograph ID	Approximate Location (Project Station)	Description
129	63+00	North view of outboard levee slope



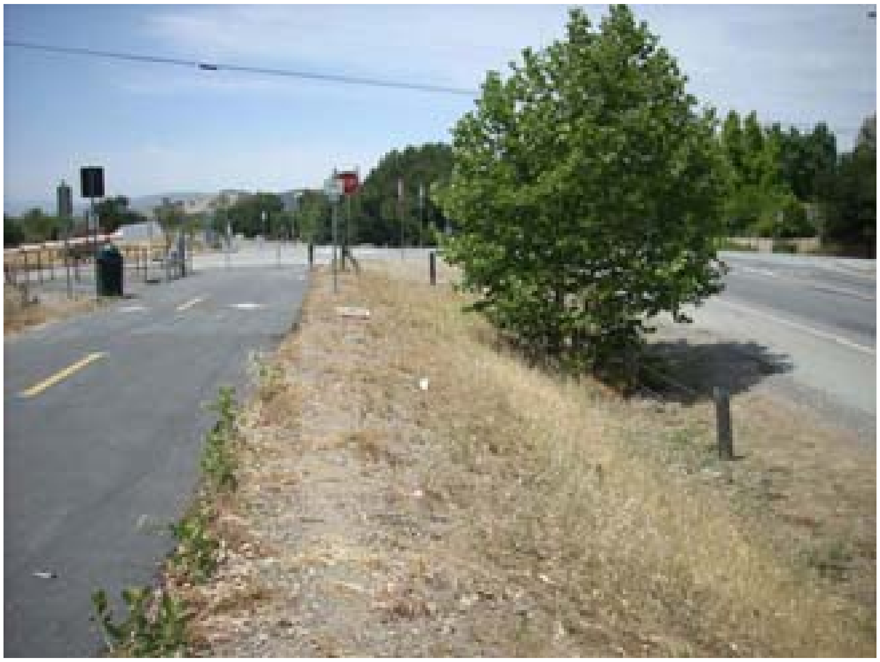
Photograph ID	Approximate Location (Project Station)	Description
130	63+00	South view of outboard levee slope



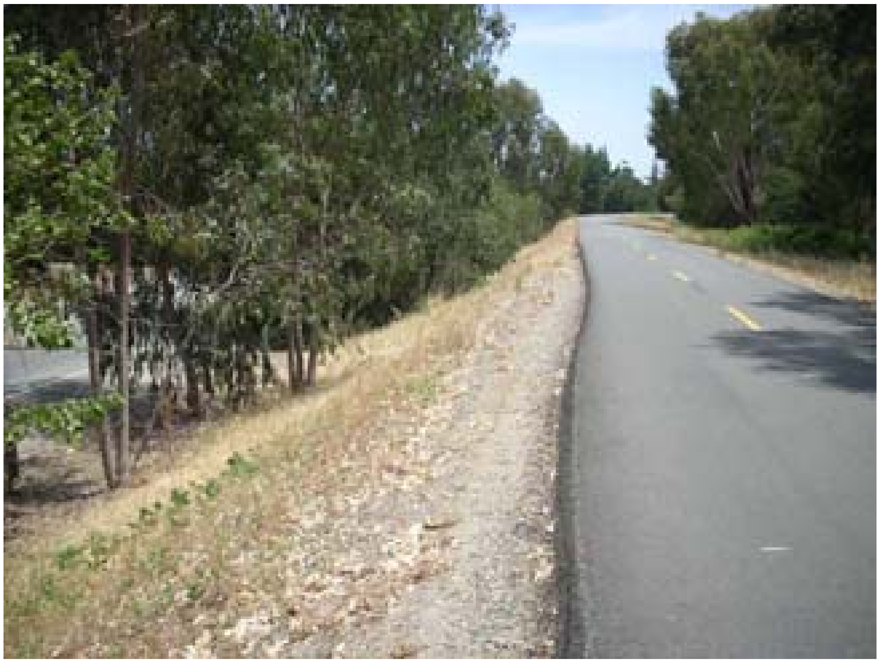
Photograph ID	Approximate Location (Project Station)	Description
131	63+00	South view of inboard levee slope



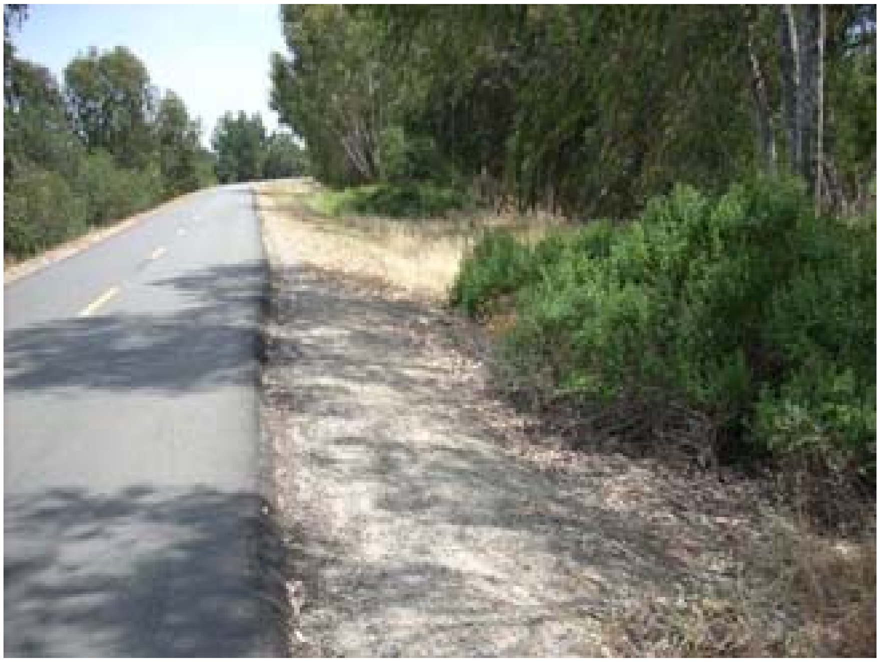
Photograph ID	Approximate Location (Project Station)	Description
132	69+00	North view of inboard levee slope and Miller Avenue Crossing



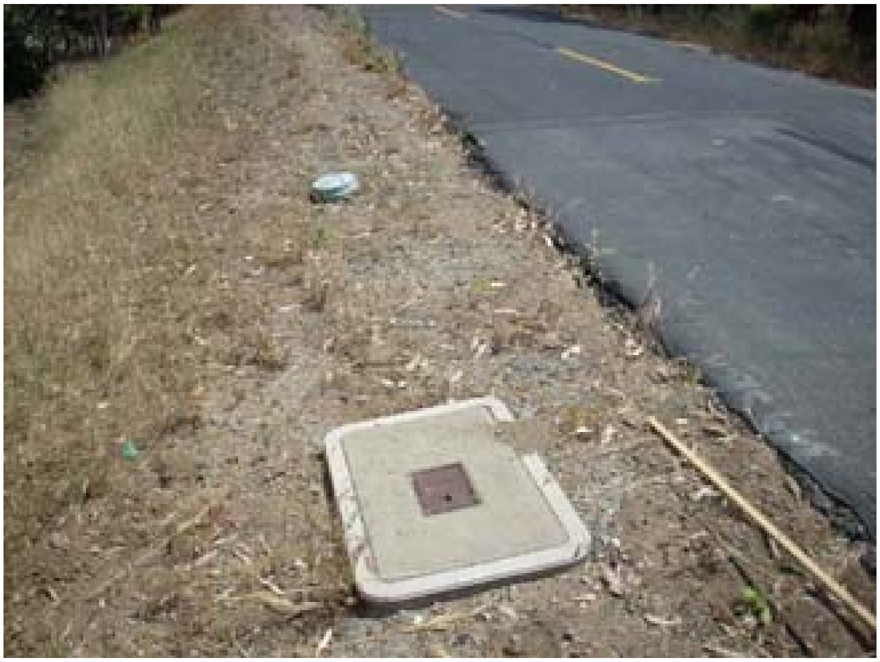
Photograph ID	Approximate Location (Project Station)	Description
133	69+00	North view of outboard levee slope and Miller Avenue crossing



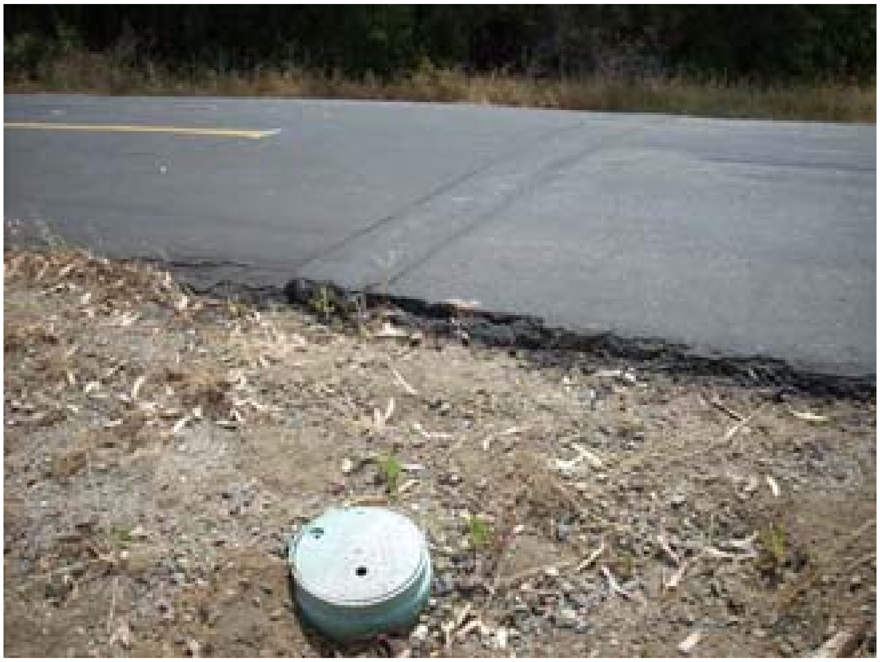
Photograph ID	Approximate Location (Project Station)	Description
134	69+00	South view of outboard levee slope



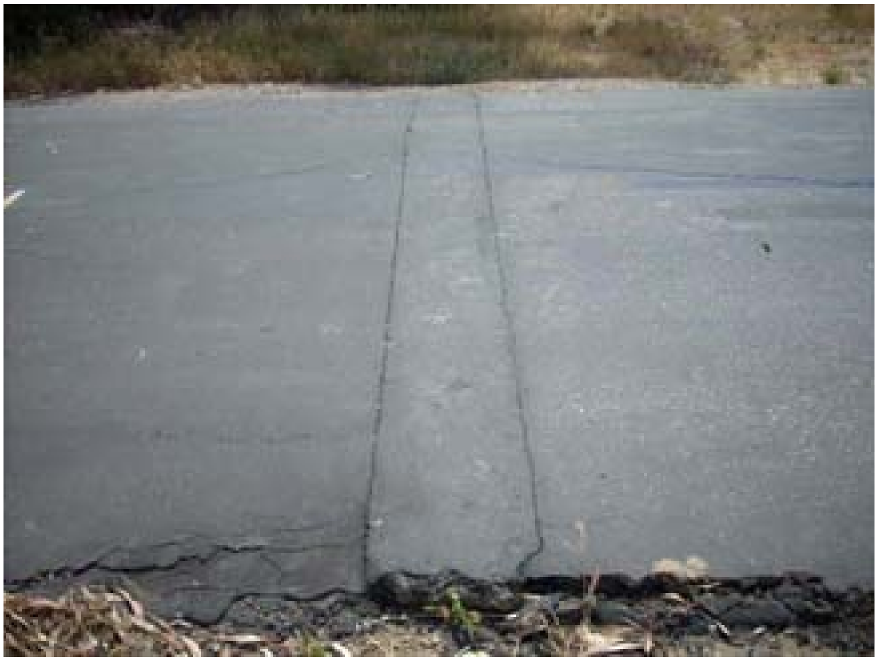
Photograph ID	Approximate Location (Project Station)	Description
135	69+00	South view of inboard levee slope



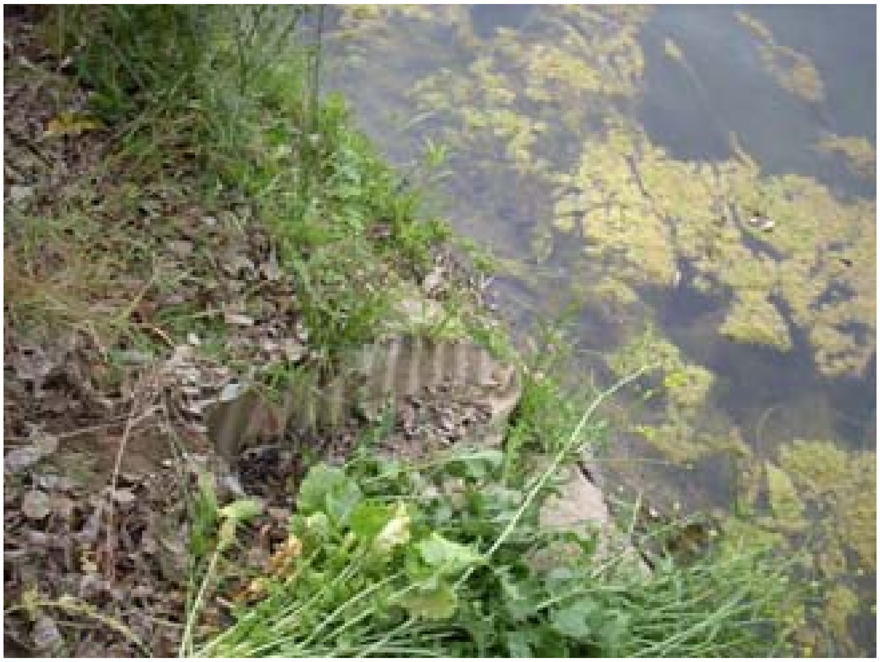
Photograph ID	Approximate Location (Project Station)	Description
136	69+40	Water meter box and irrigation line under crest of levee



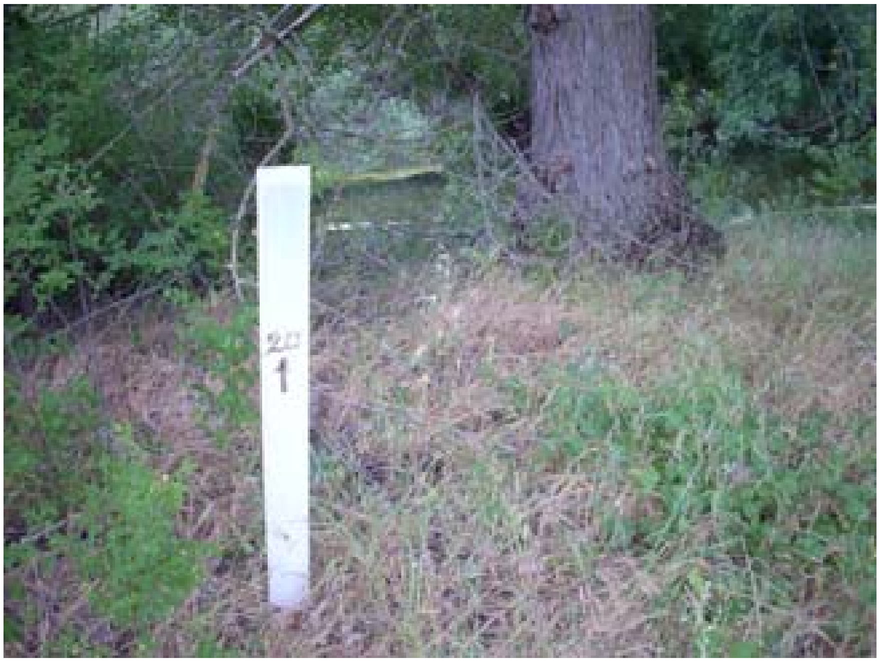
Photograph ID	Approximate Location (Project Station)	Description
137	69+40	Water meter box and irrigation line under crest of levee



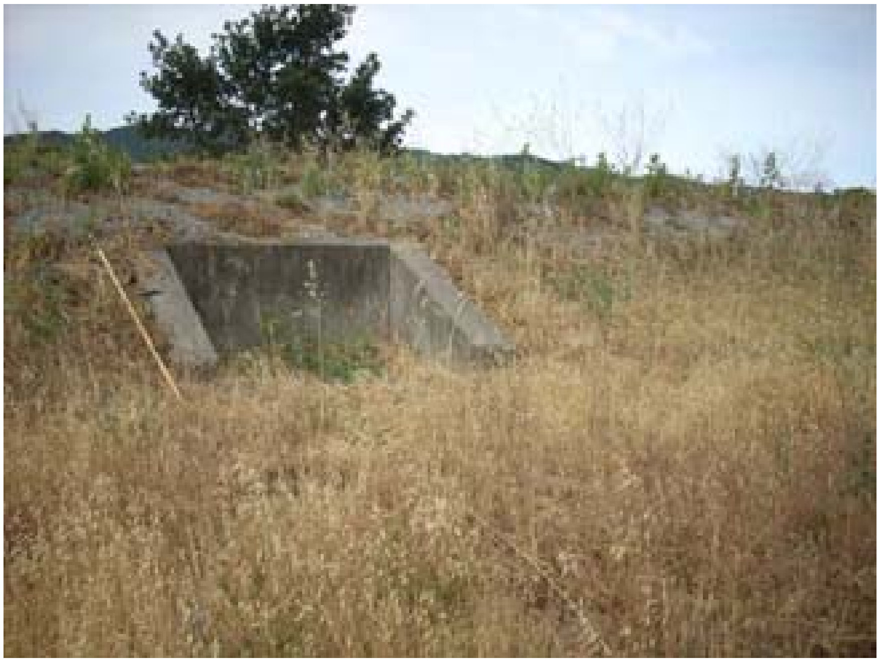
Photograph ID	Approximate Location (Project Station)	Description
138	69+40	Irrigation line under crest of levee



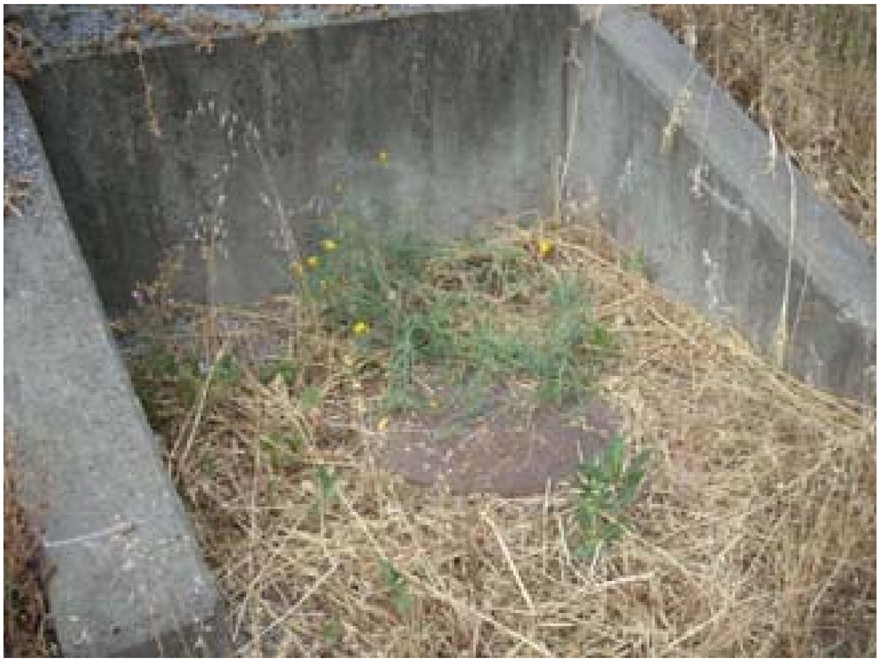
Photograph ID	Approximate Location (Project Station)	Description
139	72+70	18” CMP storm drain outfall



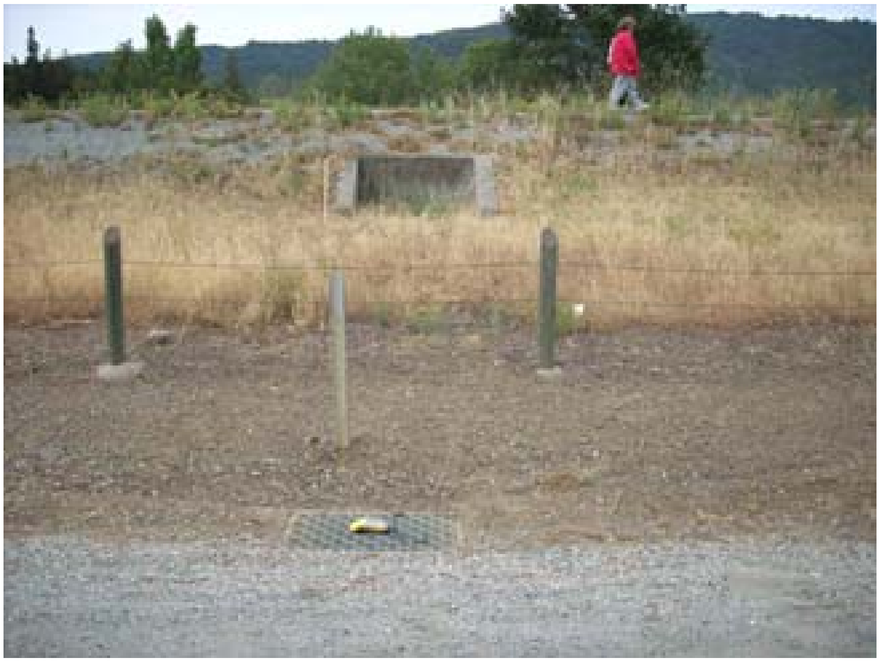
Photograph ID	Approximate Location (Project Station)	Description
140	72+70	Outfall marker



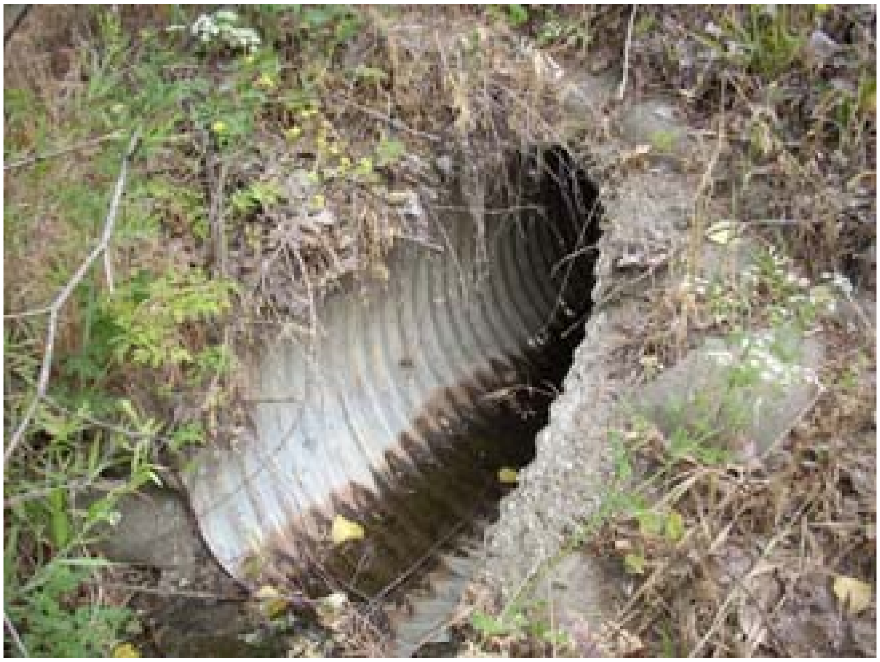
Photograph ID	Approximate Location (Project Station)	Description
141	72+70	Storm drain manhole



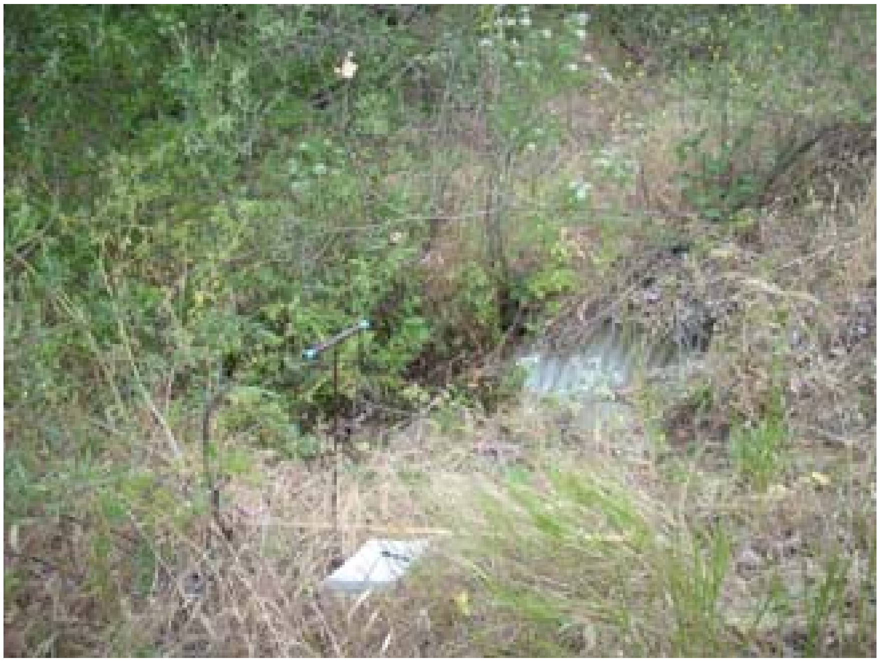
Photograph ID	Approximate Location (Project Station)	Description
142	72+70	Storm drain manhole



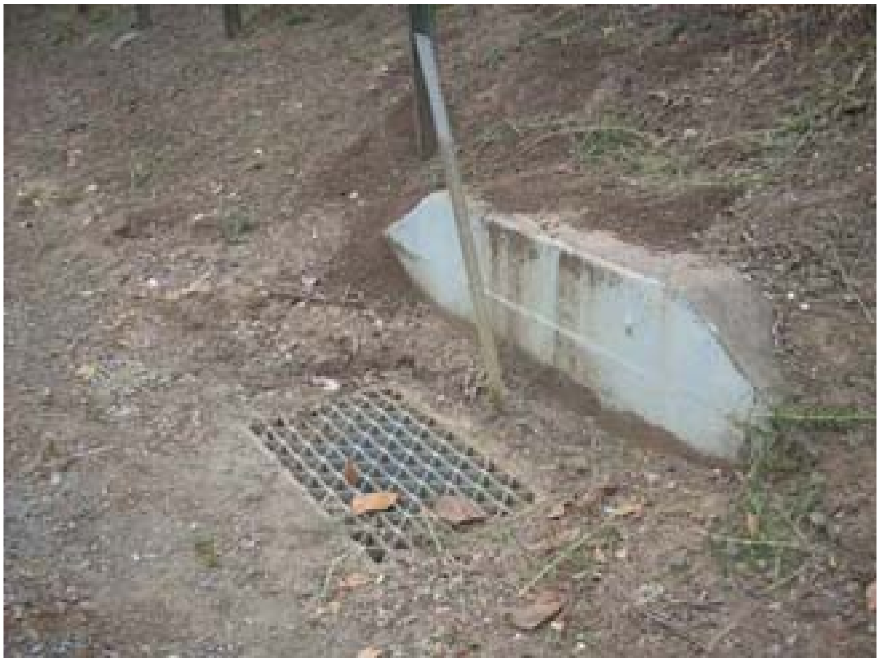
Photograph ID	Approximate Location (Project Station)	Description
143	72+70	Storm drain catch basin



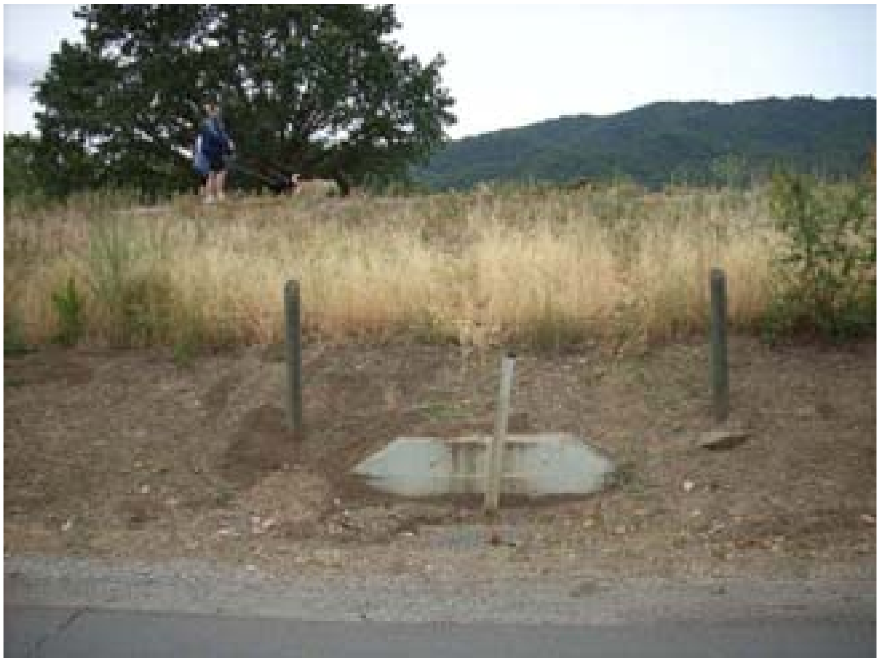
Photograph ID	Approximate Location (Project Station)	Description
144	82+00	30” CMP storm drain outfall



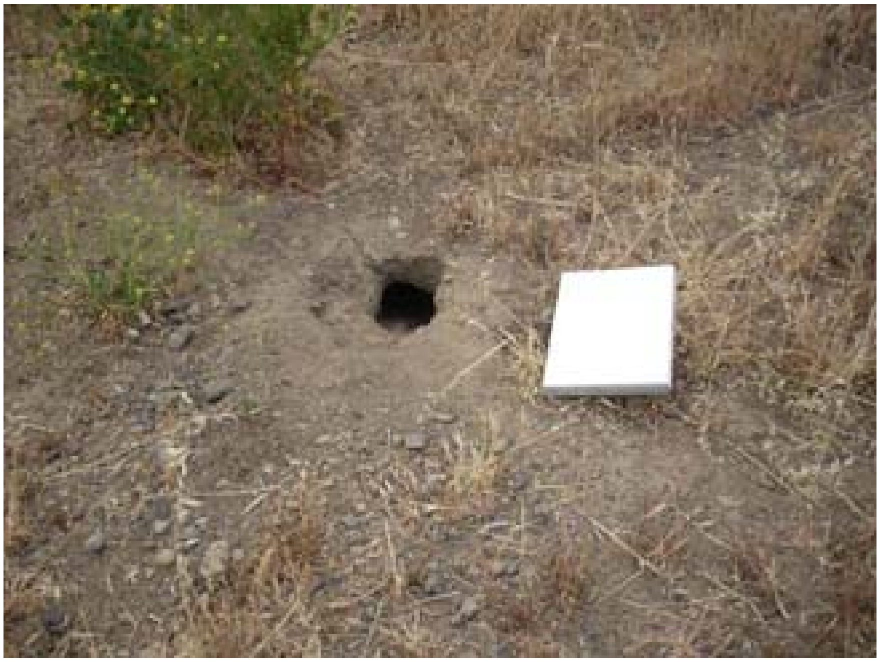
Photograph ID	Approximate Location (Project Station)	Description
145	82+00	30” CMP storm drain outfall



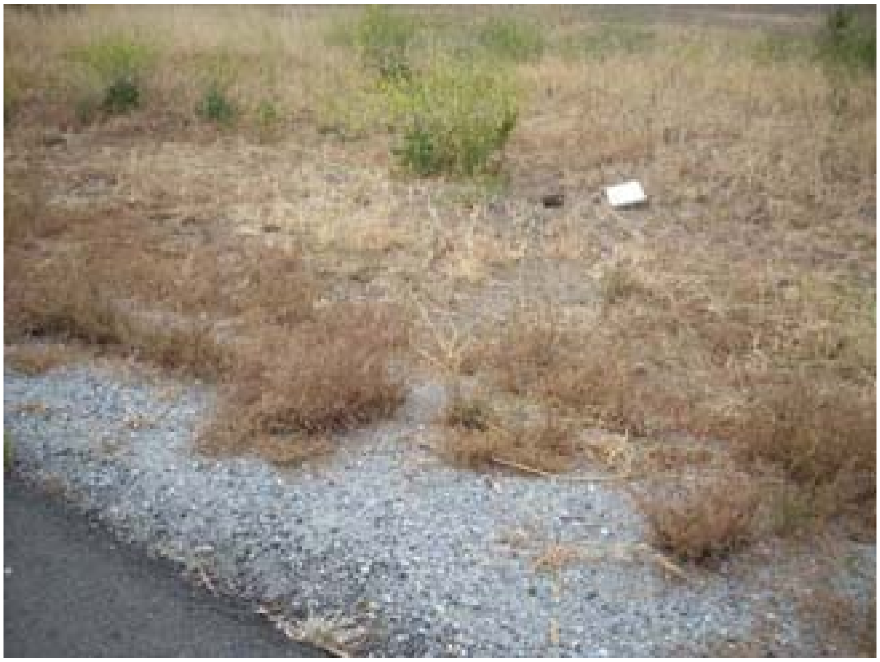
Photograph ID	Approximate Location (Project Station)	Description
146	80+90	Storm drain catch basin



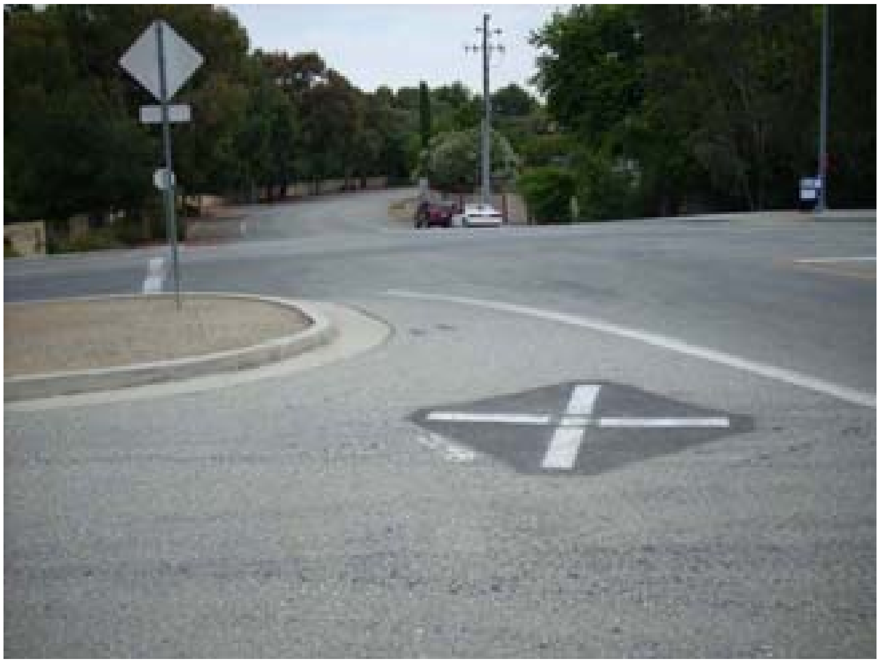
Photograph ID	Approximate Location (Project Station)	Description
147	80+90	Storm drain catch basin



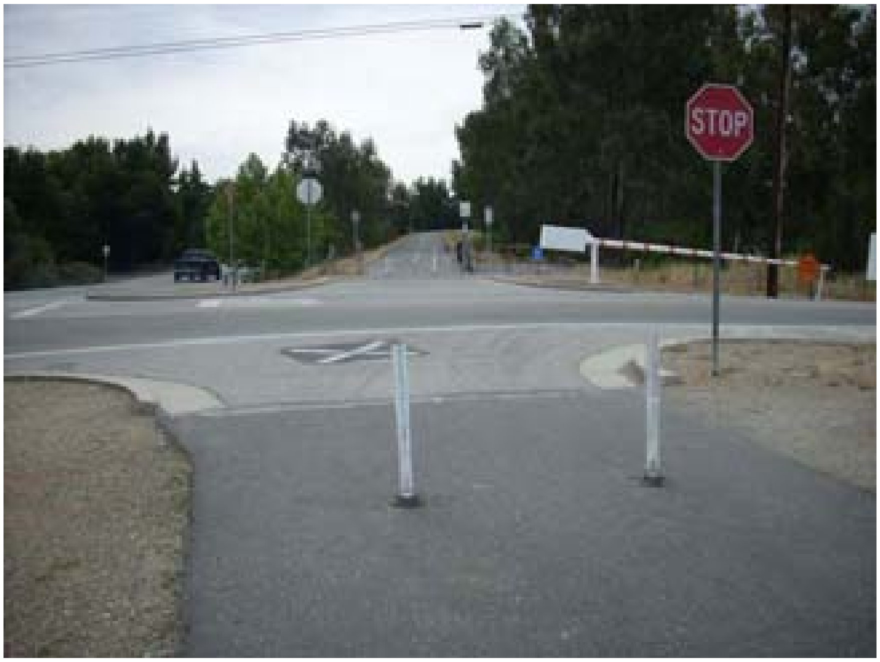
Photograph ID	Approximate Location (Project Station)	Description
148	78+50	Ground squirrel burrow about 10’ inboard from crest of levee



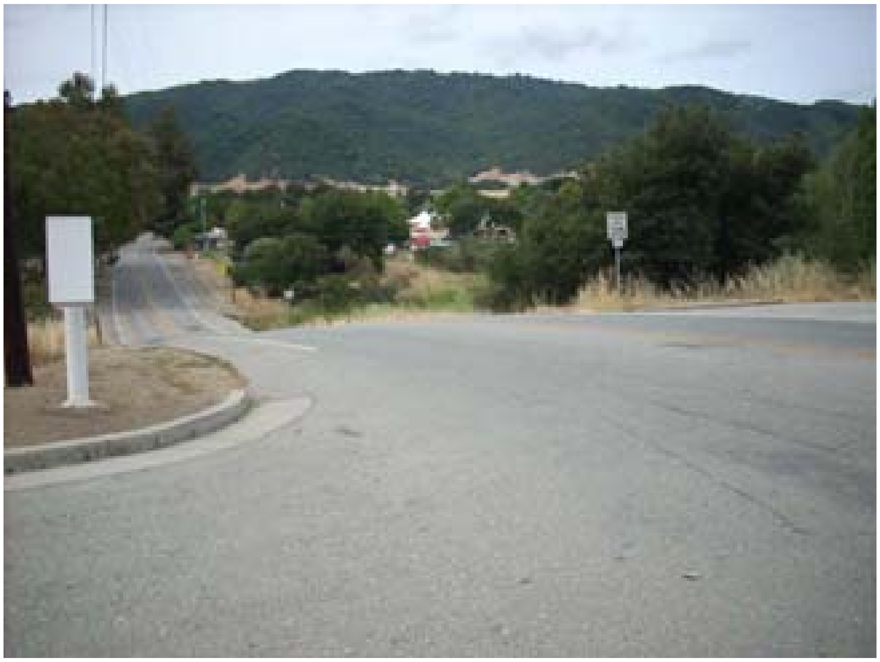
Photograph ID	Approximate Location (Project Station)	Description
149	78+50	Ground squirrel burrow about 10’ inboard from crest of levee



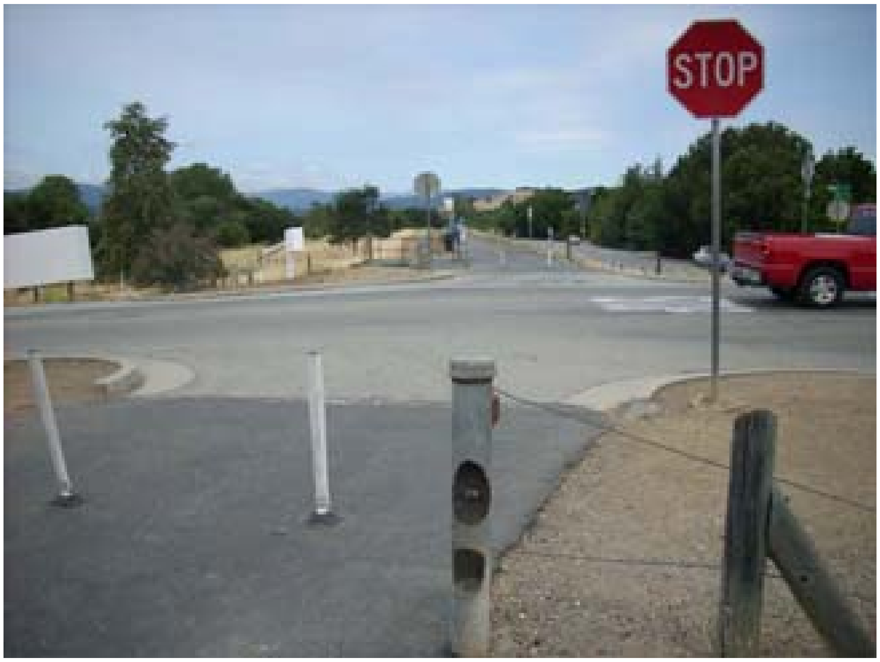
Photograph ID	Approximate Location (Project Station)	Description
150	70+70	Miller Avenue crossing, east (outboard) view



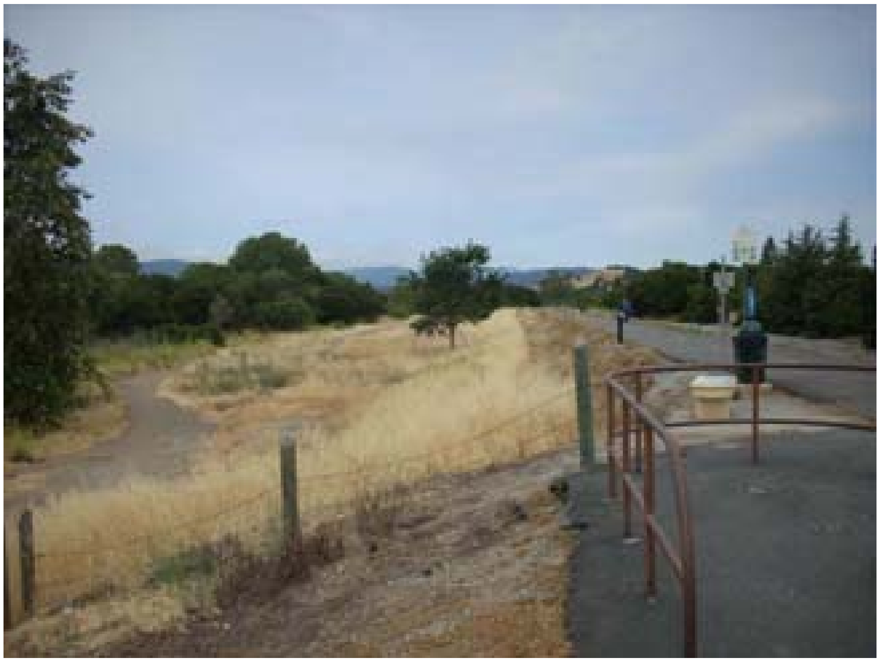
Photograph ID	Approximate Location (Project Station)	Description
151	70+70	Miller Avenue crossing, south view



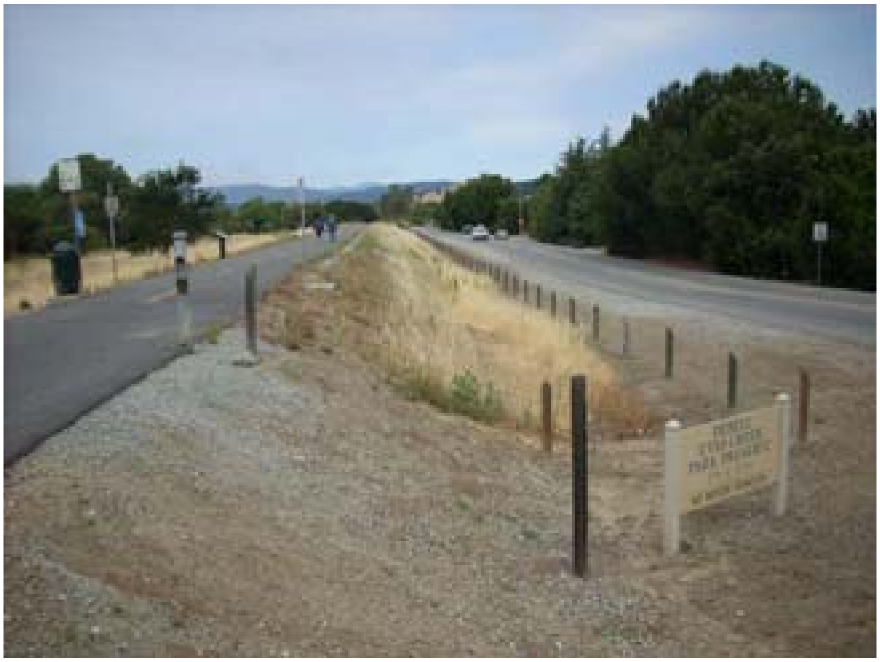
Photograph ID	Approximate Location (Project Station)	Description
152	70+00	Miller Avenue crossing, west (inboard) view



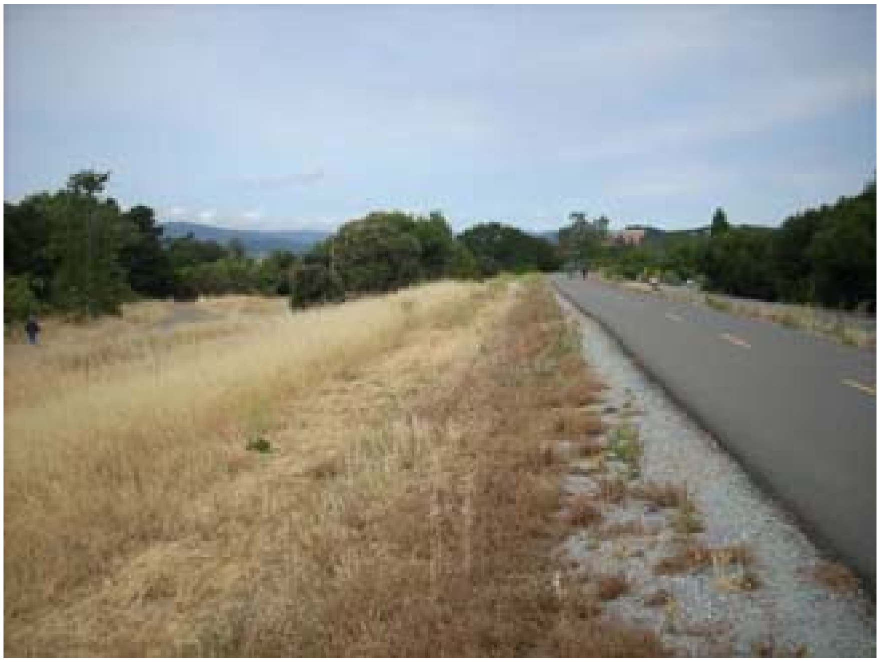
Photograph ID	Approximate Location (Project Station)	Description
153	70+00	Miller Avenue crossing, north view



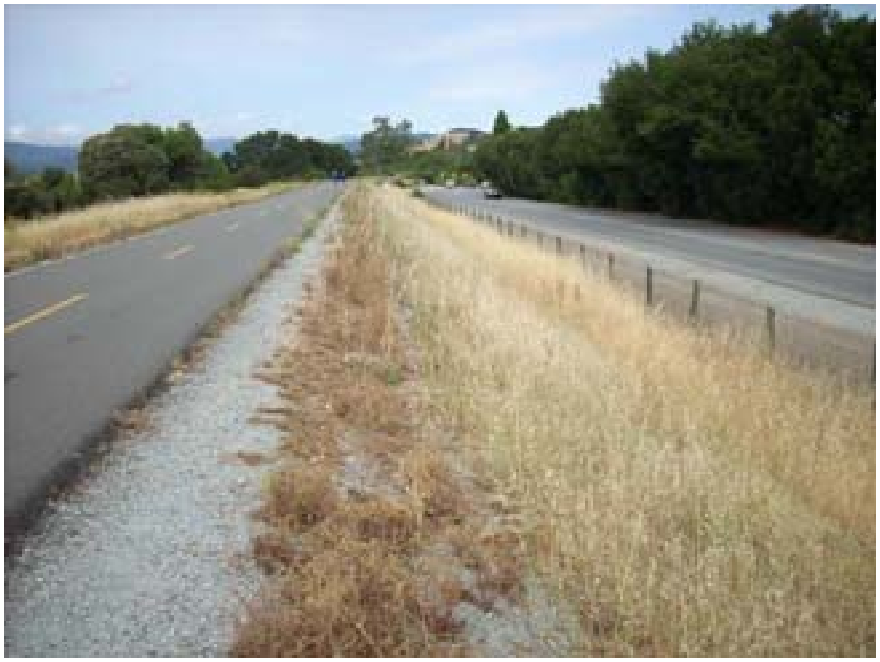
Photograph ID	Approximate Location (Project Station)	Description
154	70+70	North view of inboard levee slope



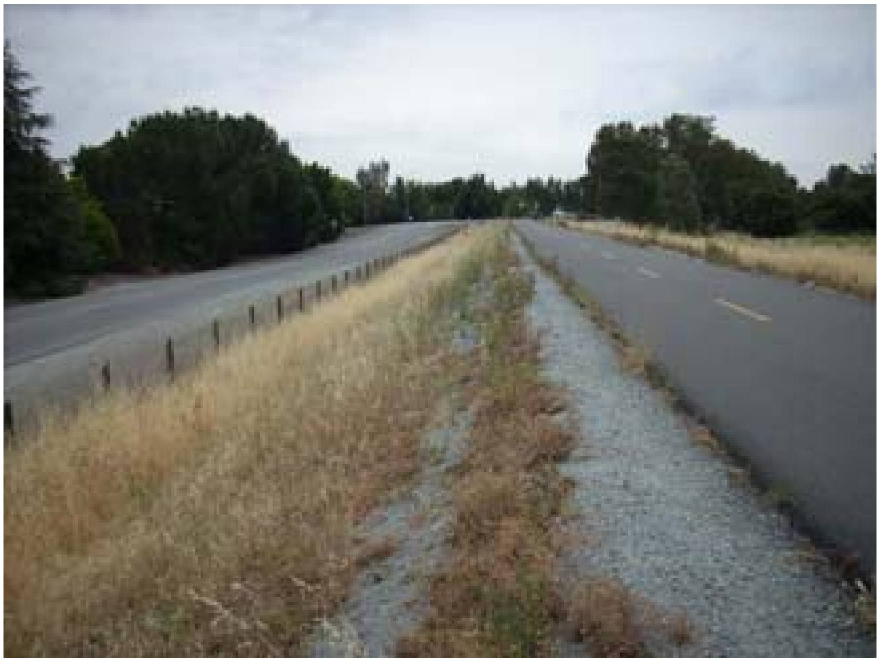
Photograph ID	Approximate Location (Project Station)	Description
155	70+70	North view of outboard levee slope



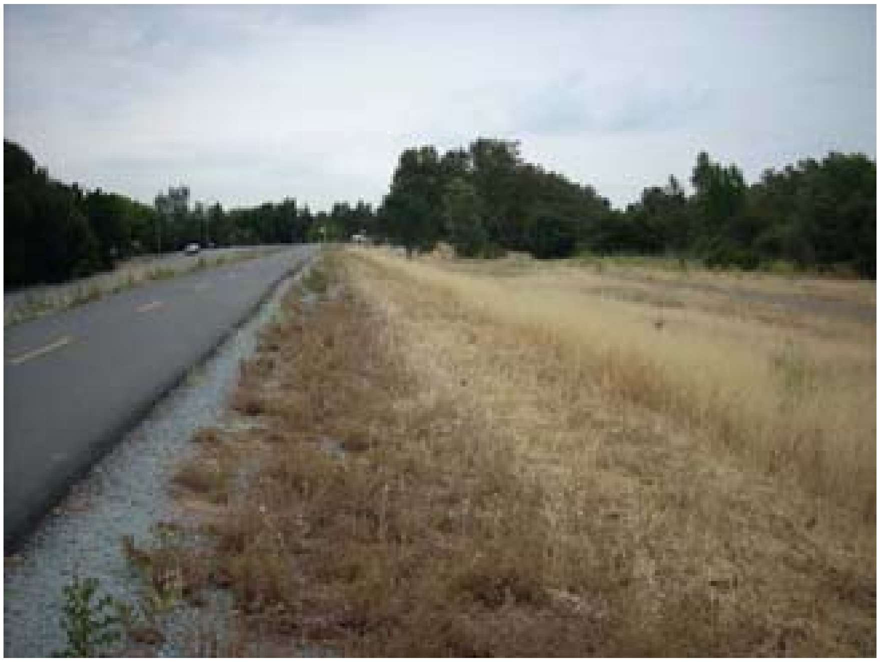
Photograph ID	Approximate Location (Project Station)	Description
156	76+00	North view of inboard levee slope



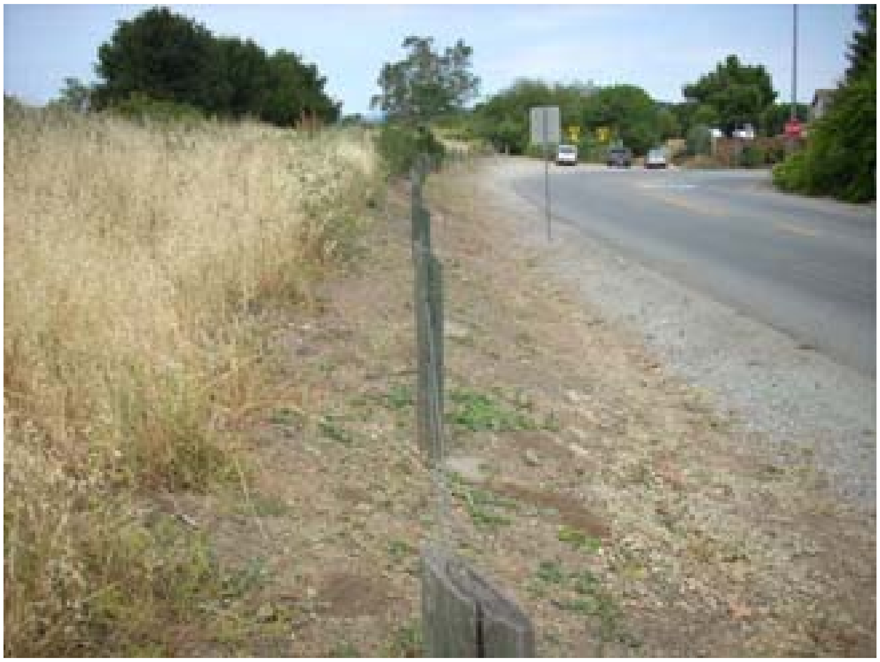
Photograph ID	Approximate Location (Project Station)	Description
157	76+00	North view of outboard levee slope



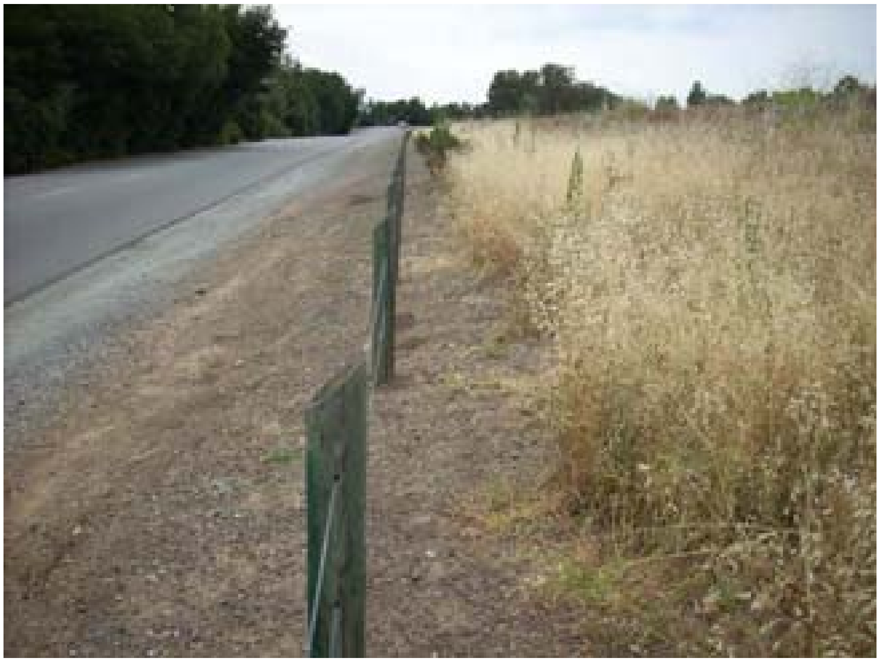
Photograph ID	Approximate Location (Project Station)	Description
158	76+00	South view of outboard levee slope



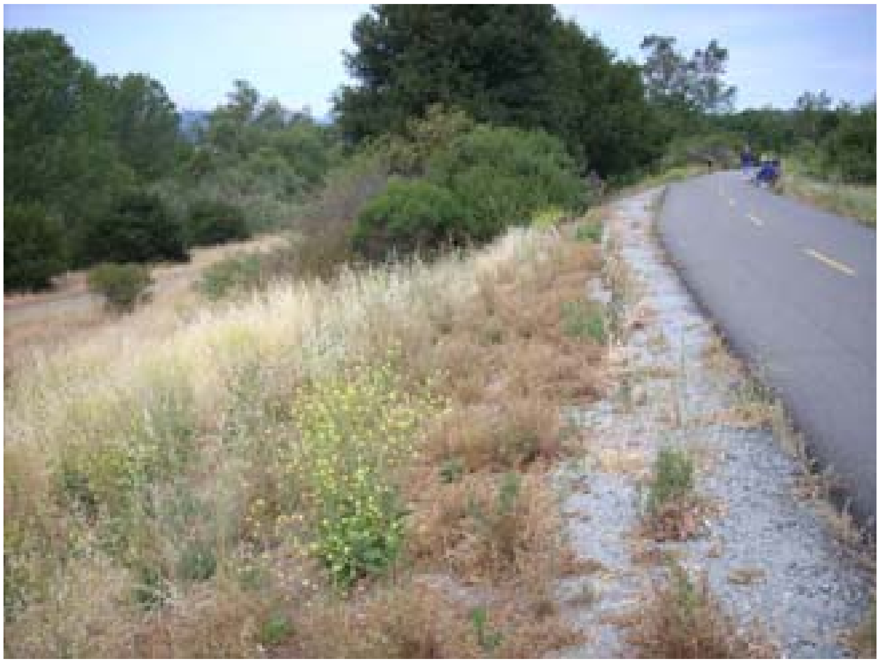
Photograph ID	Approximate Location (Project Station)	Description
159	76+00	South view of inboard levee slope



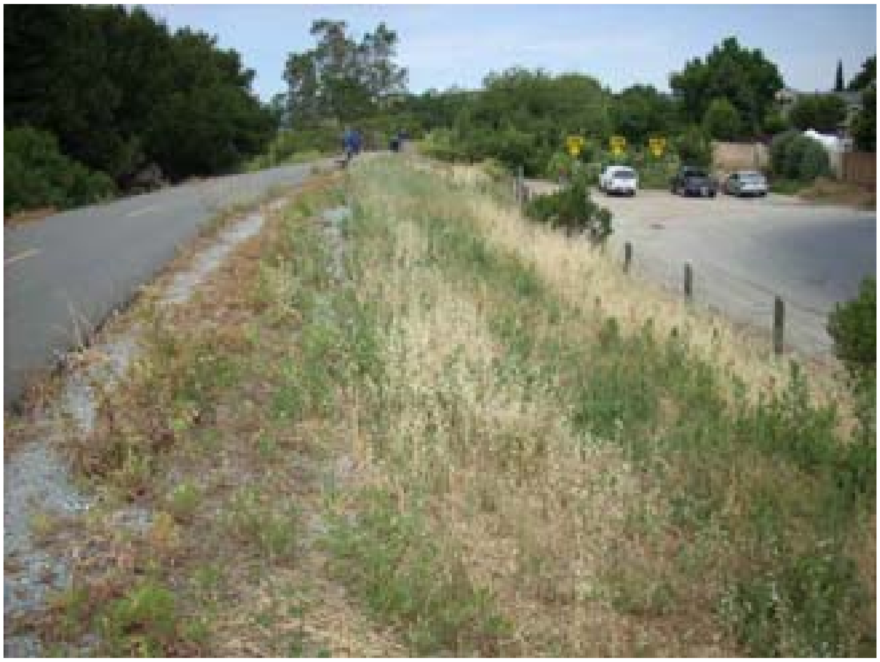
Photograph ID	Approximate Location (Project Station)	Description
160	80+00	North view of unvegetated, lower outboard levee slope along Uvas Park Drive



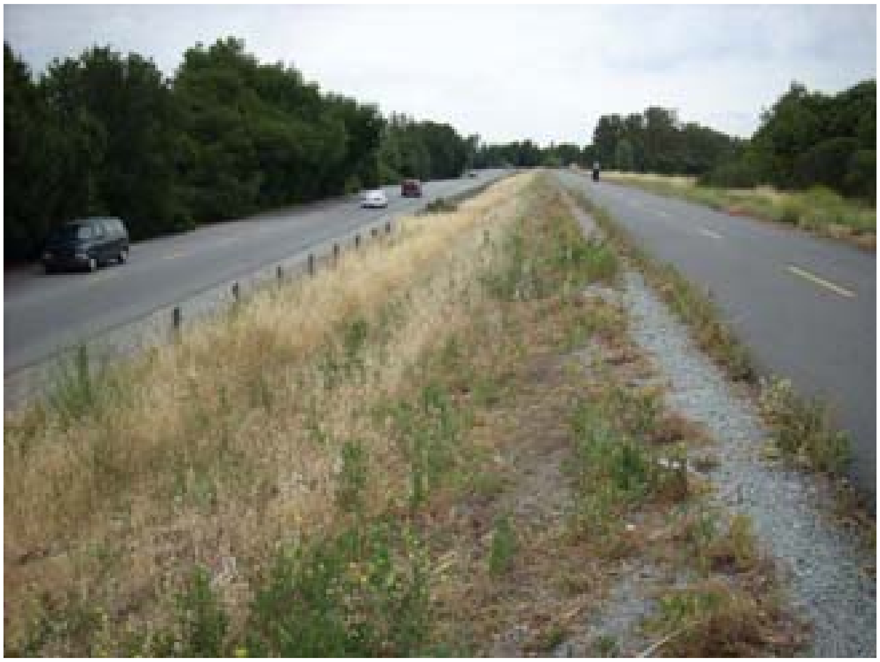
Photograph ID	Approximate Location (Project Station)	Description
161	80+00	South view of unvegetated, lower outboard levee slope along Uvas Park Drive



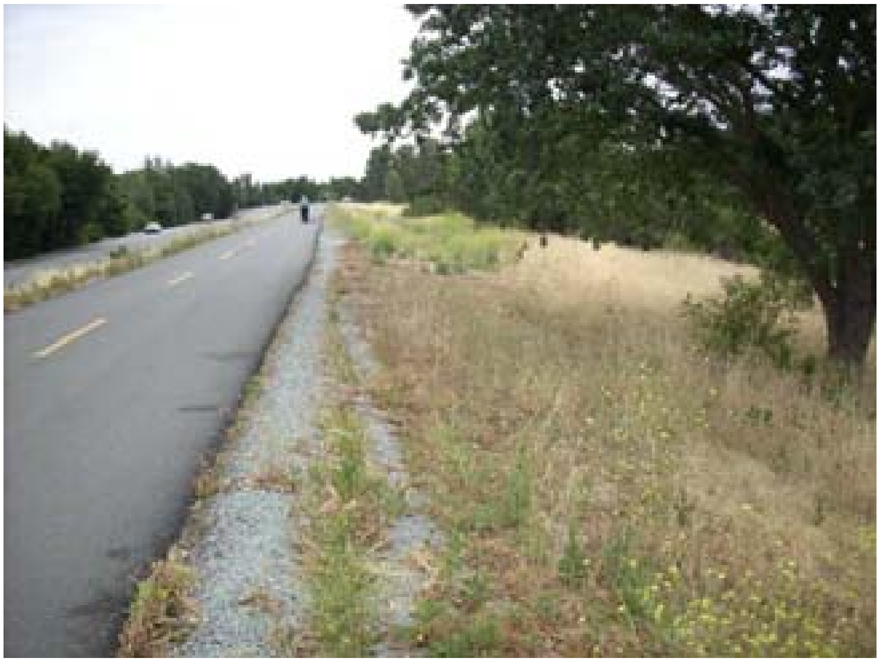
Photograph ID	Approximate Location (Project Station)	Description
162	81+00	North view of inboard levee slope



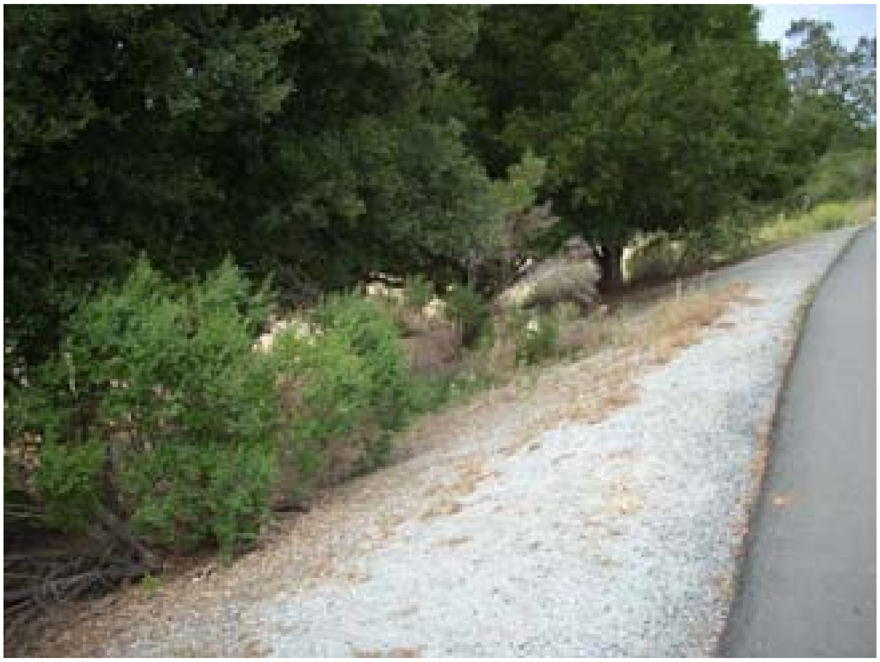
Photograph ID	Approximate Location (Project Station)	Description
163	81+00	North view of outboard levee slope



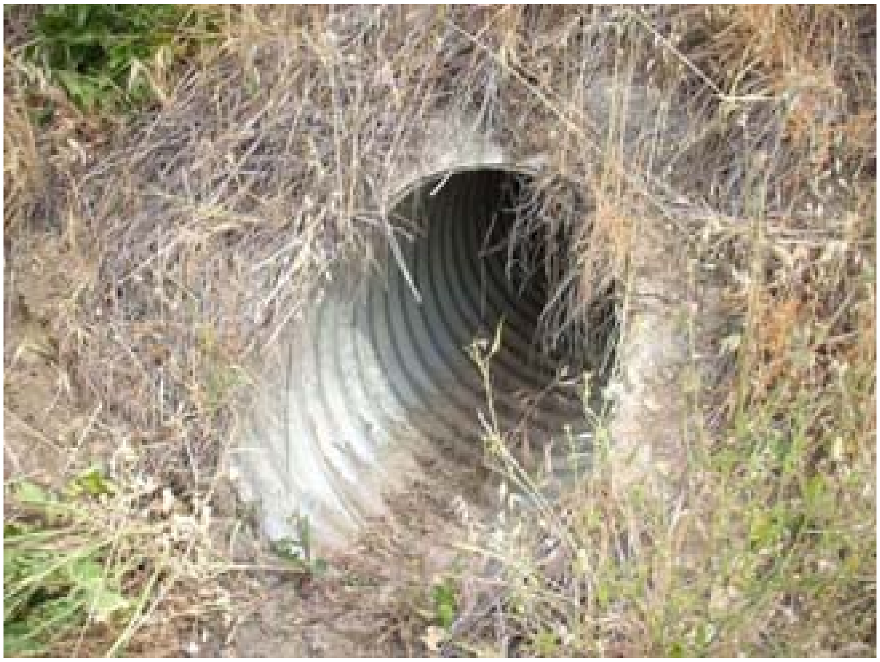
Photograph ID	Approximate Location (Project Station)	Description
164	81+00	South view of outboard levee slope



Photograph ID	Approximate Location (Project Station)	Description
165	81+00	South view of inboard levee slope



Photograph ID	Approximate Location (Project Station)	Description
166	82+00	Trees growing on inboard levee slope



Photograph ID	Approximate Location (Project Station)	Description
167	95+00	24" CMP storm drain outfall

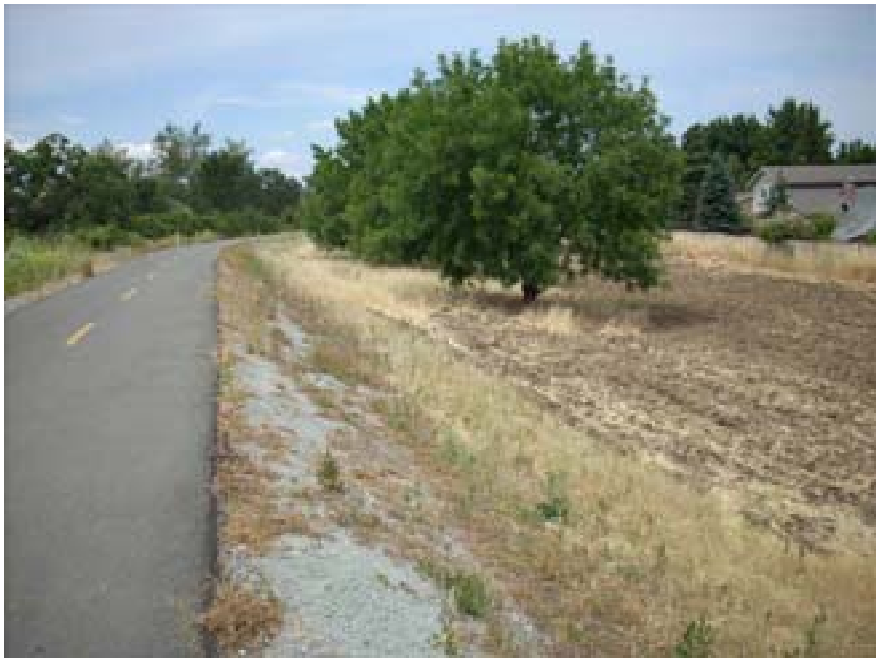
Photograph ID	Approximate Location (Project Station)	Description
168	95+00	24" CMP storm drain outfall

Photograph ID	Approximate Location (Project Station)	Description
169	95+00	24” CMP storm drain outfall (rock apron)

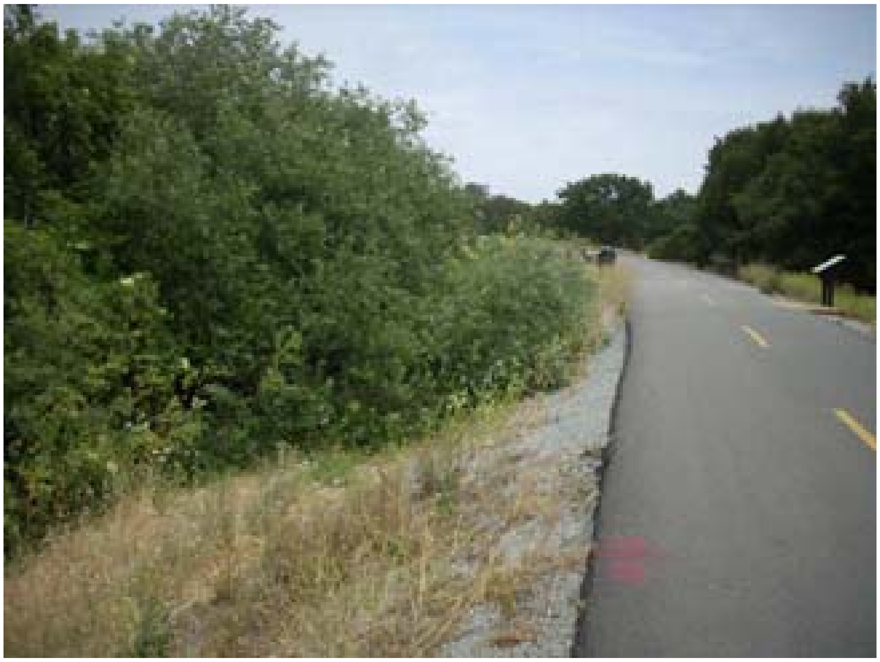
Photograph ID	Approximate Location (Project Station)	Description
170	95+00	Sanitary sewer manhole

Photograph ID	Approximate Location (Project Station)	Description
171	95+00	Sanitary sewer manhole, view from levee crest

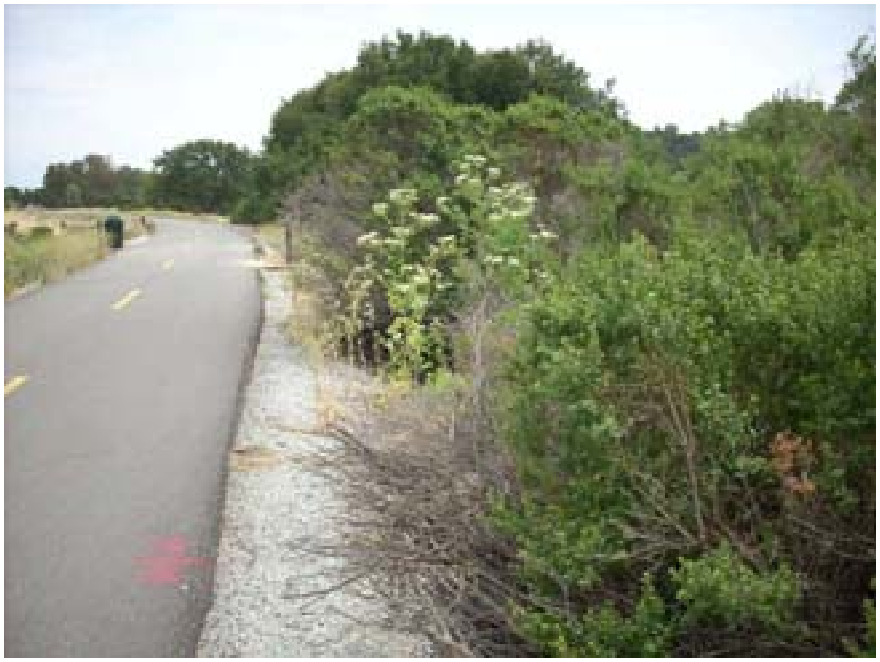
Photograph ID	Approximate Location (Project Station)	Description
172	84+00	North view of inboard levee slope



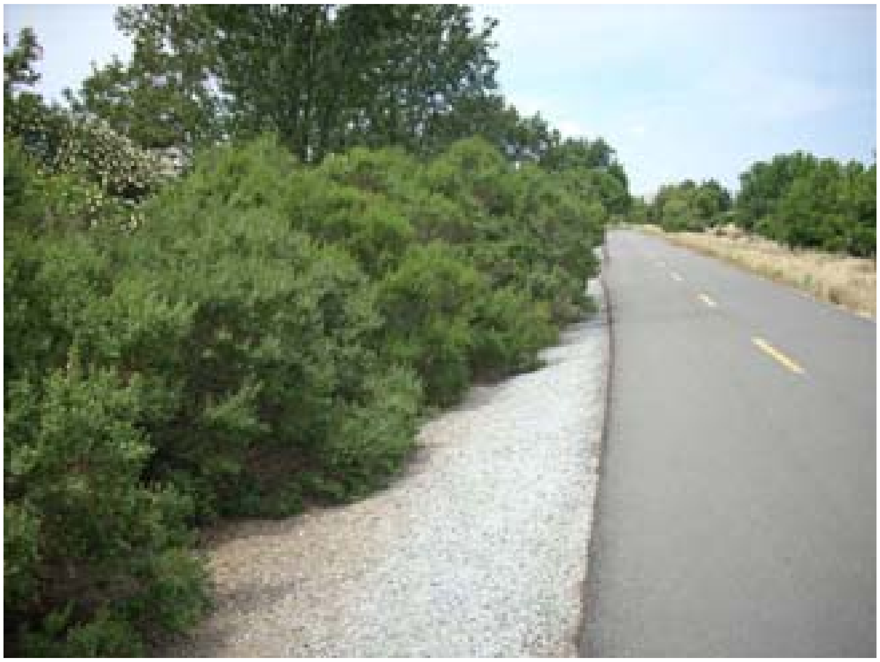
Photograph ID	Approximate Location (Project Station)	Description
173	84+00	North view of outboard levee slope



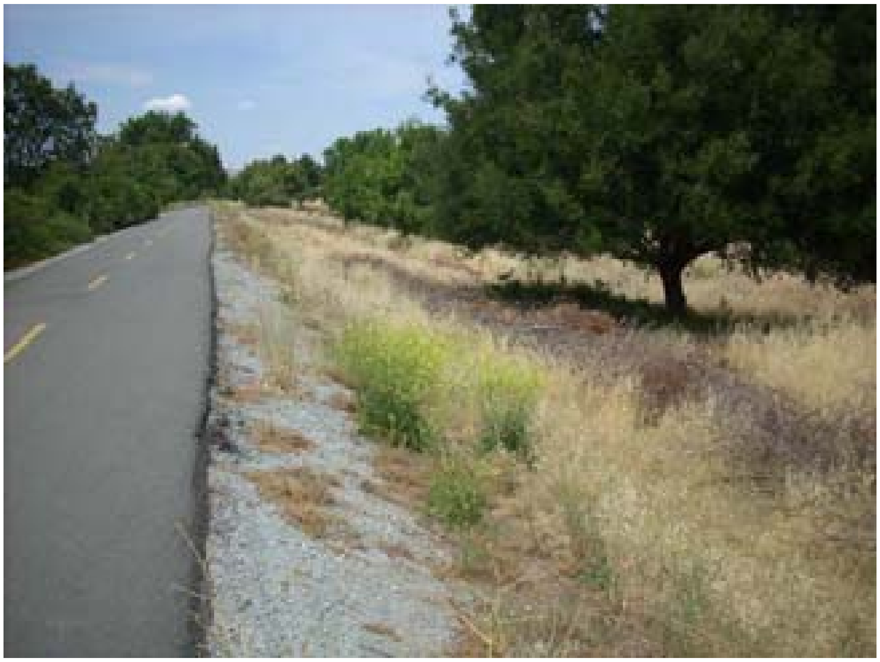
Photograph ID	Approximate Location (Project Station)	Description
174	84+00	South view of outboard levee slope



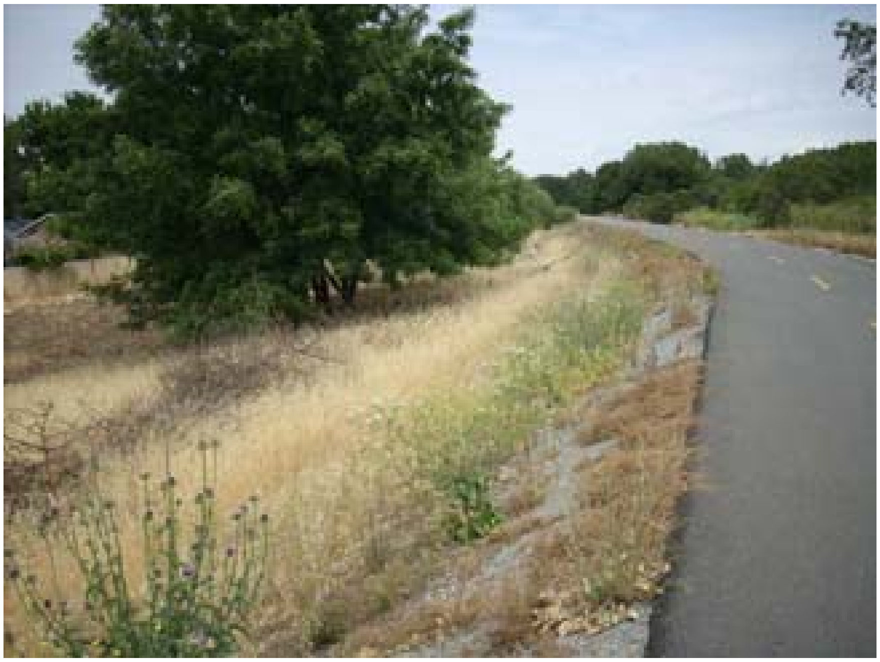
Photograph ID	Approximate Location (Project Station)	Description
175	84+00	South view of inboard levee slope



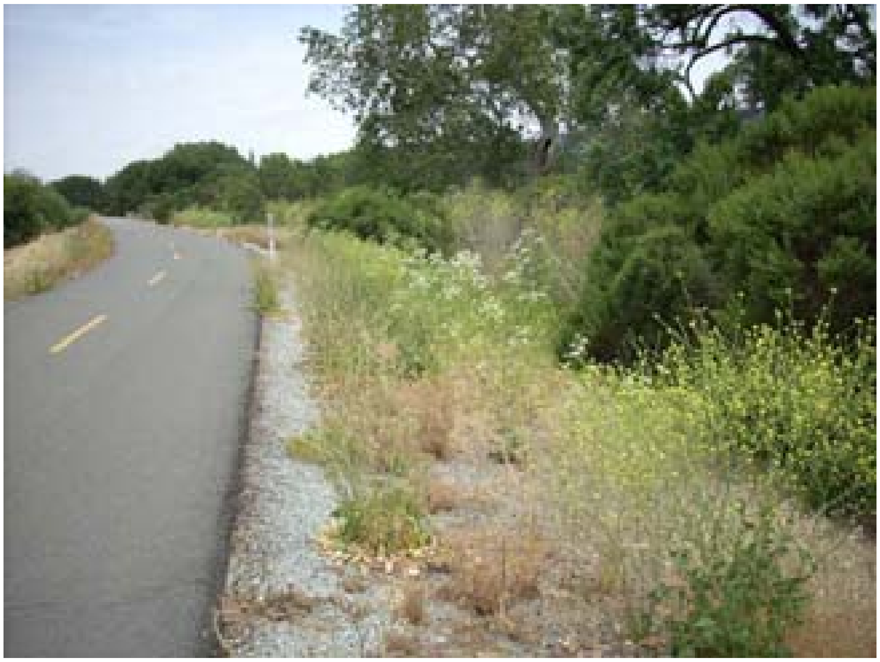
Photograph ID	Approximate Location (Project Station)	Description
176	87+00	North view of inboard levee slope



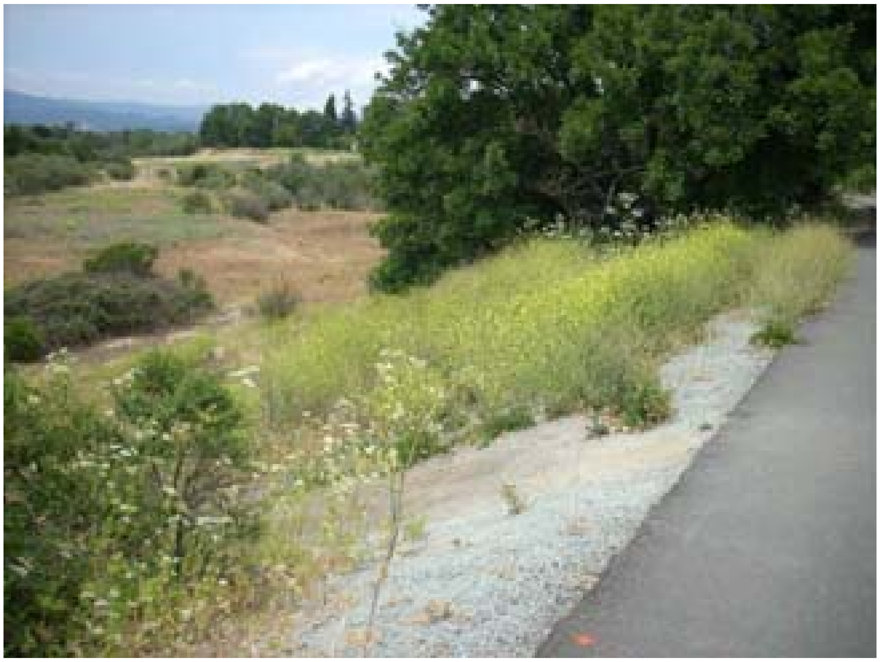
Photograph ID	Approximate Location (Project Station)	Description
177	87+00	North view of outboard levee slope



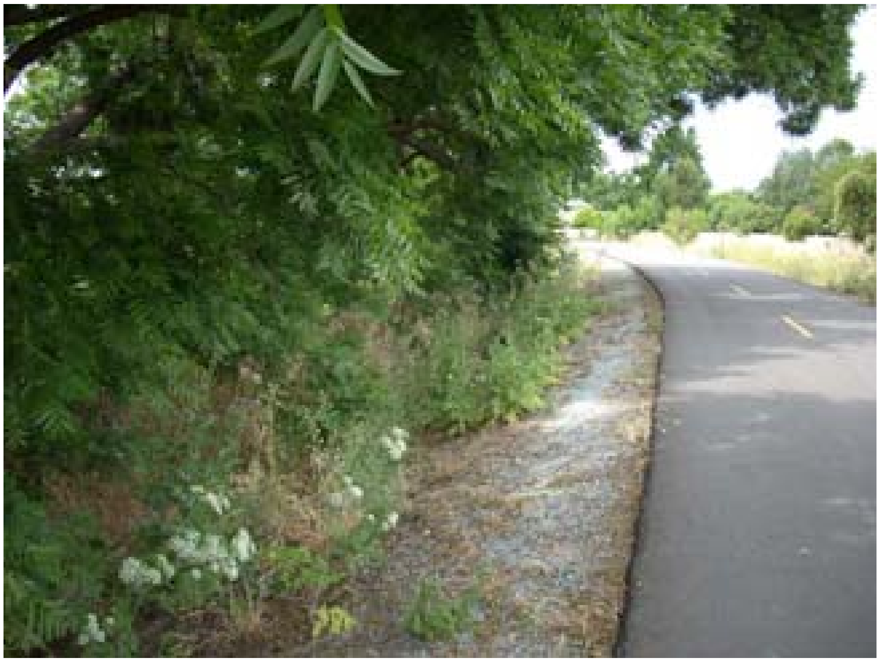
Photograph ID	Approximate Location (Project Station)	Description
178	87+00	South view of outboard levee slope



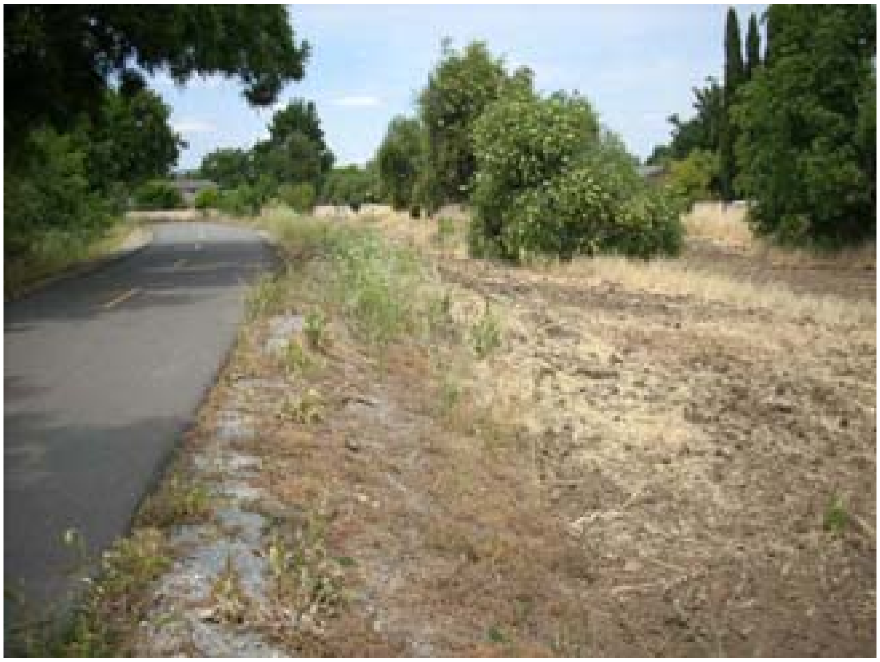
Photograph ID	Approximate Location (Project Station)	Description
179	87+00	South view of inboard levee slope



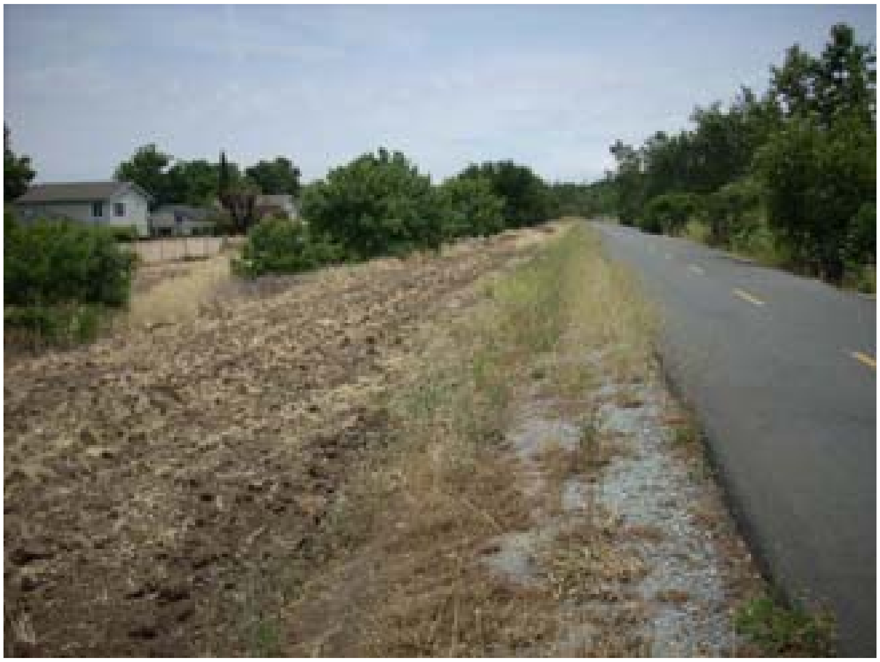
Photograph ID	Approximate Location (Project Station)	Description
180	91+00	Moderately steep inboard levee/stream bank slope



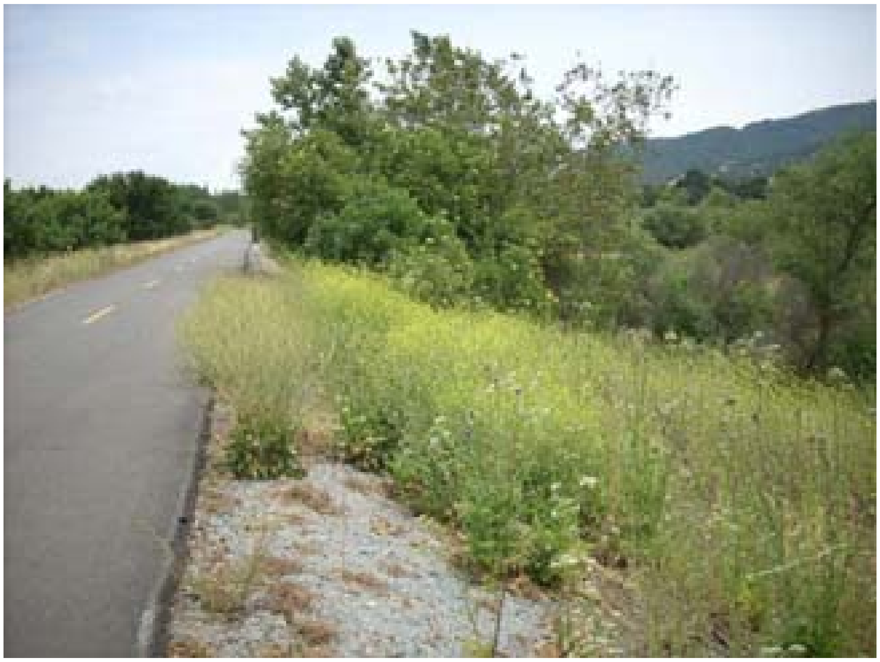
Photograph ID	Approximate Location (Project Station)	Description
181	91+80	North view of inboard levee slope



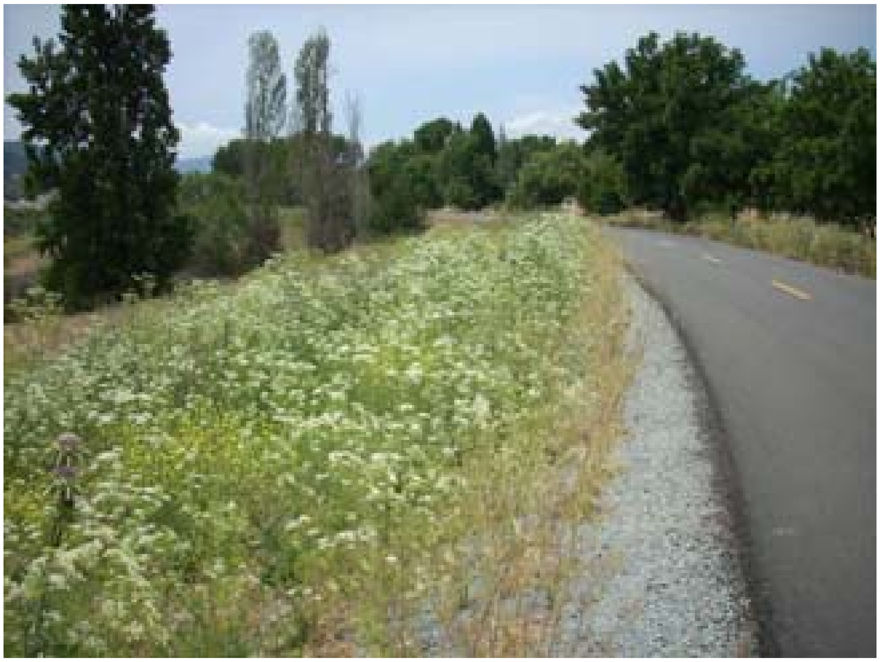
Photograph ID	Approximate Location (Project Station)	Description
182	91+80	North view of outboard levee slope



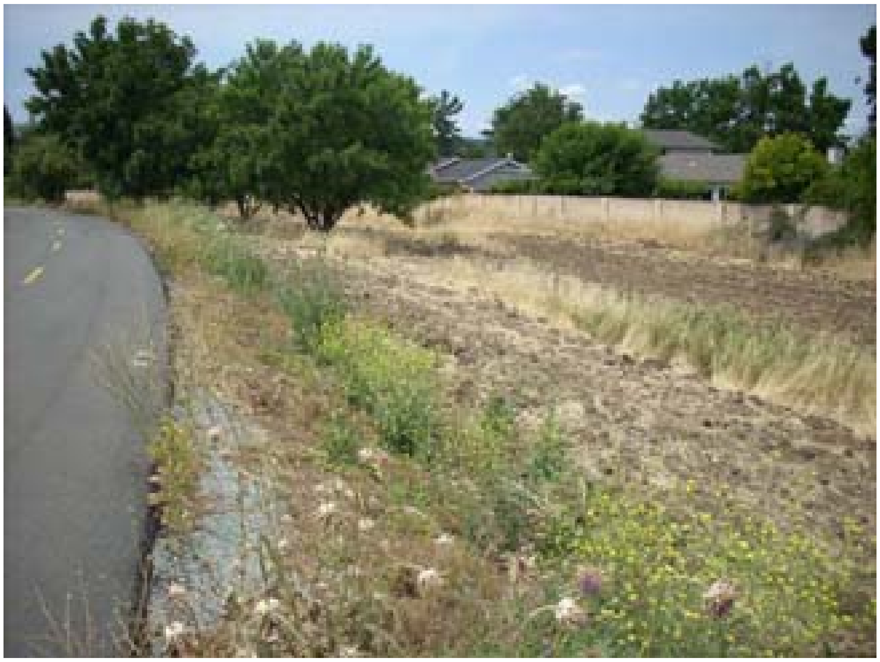
Photograph ID	Approximate Location (Project Station)	Description
183	91+80	South view of outboard levee slope



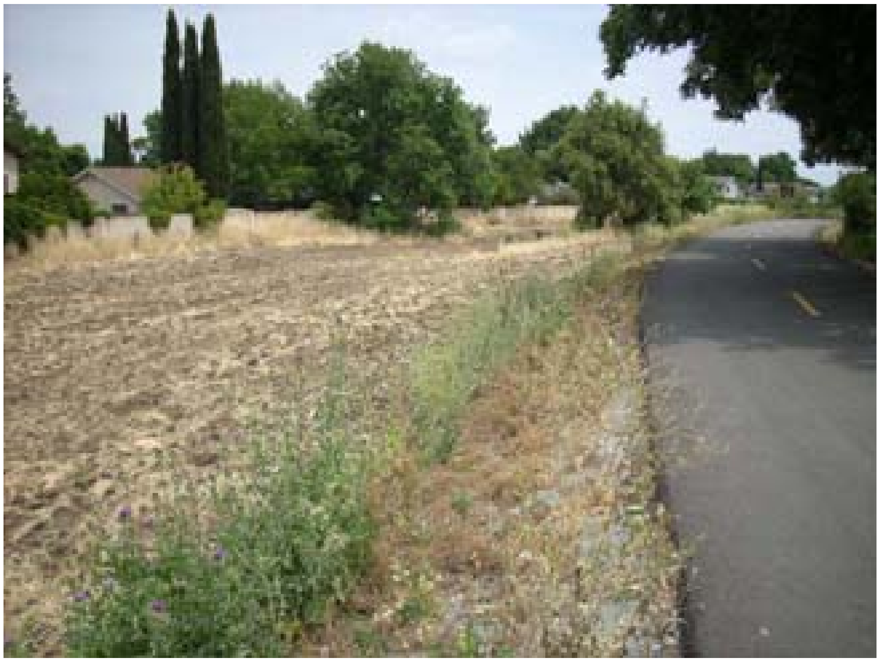
Photograph ID	Approximate Location (Project Station)	Description
184	91+80	South view of inboard levee/stream bank slope



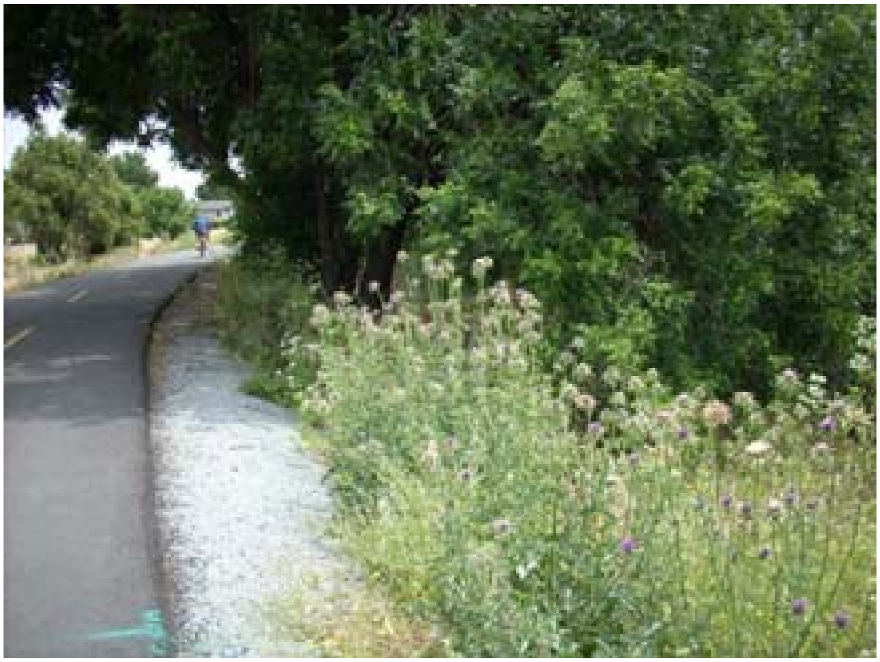
Photograph ID	Approximate Location (Project Station)	Description
185	95+00	North view of inboard levee/stream bank slope



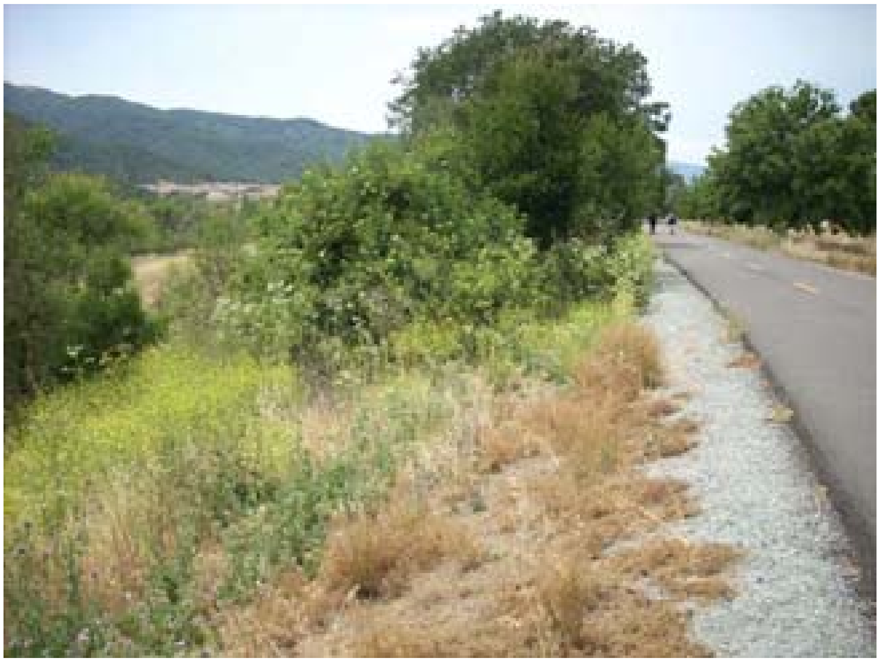
Photograph ID	Approximate Location (Project Station)	Description
186	95+00	North view of outboard levee slope



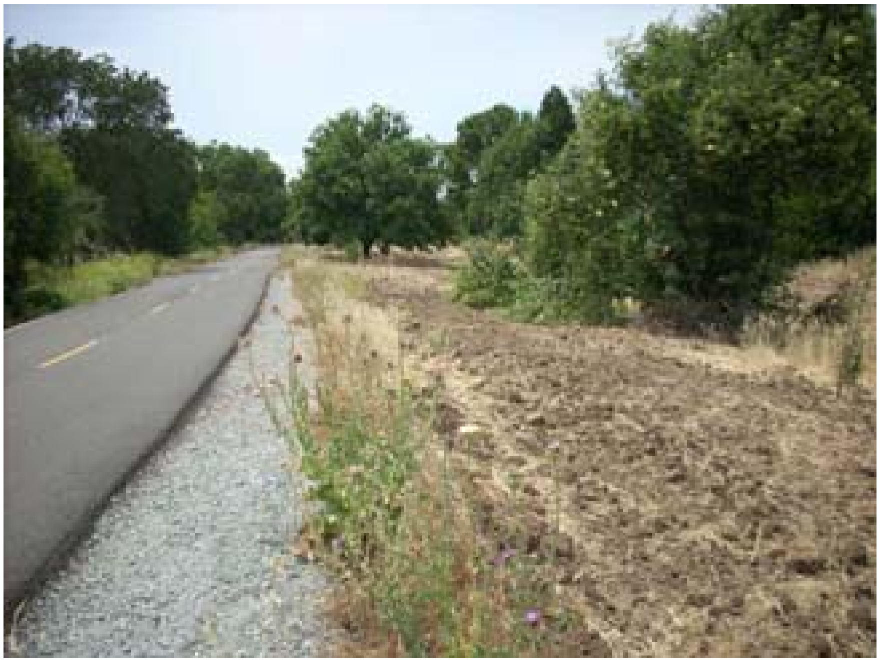
Photograph ID	Approximate Location (Project Station)	Description
187	95+00	South view of outboard levee slope



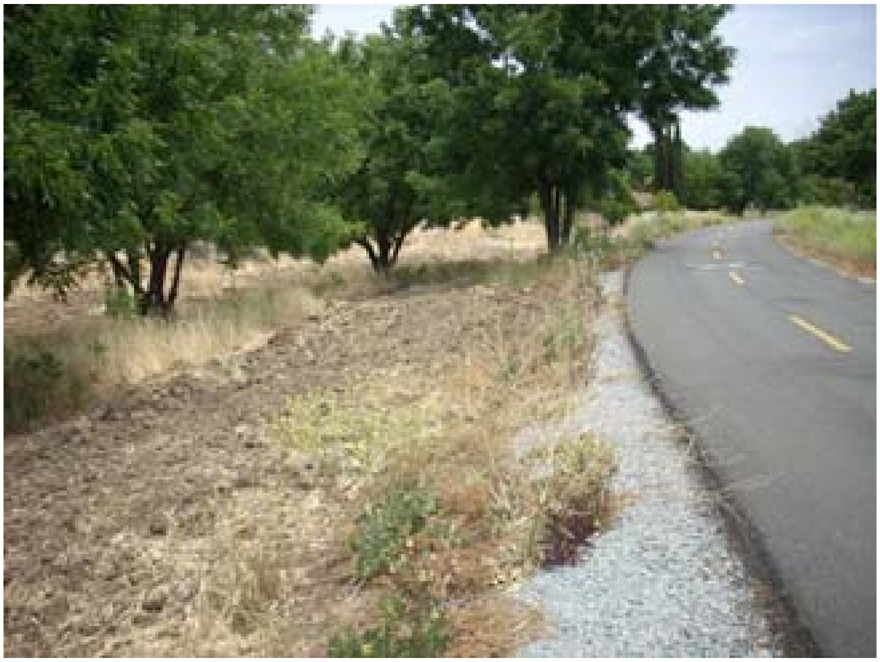
Photograph ID	Approximate Location (Project Station)	Description
188	95+00	South view of inboard levee slope



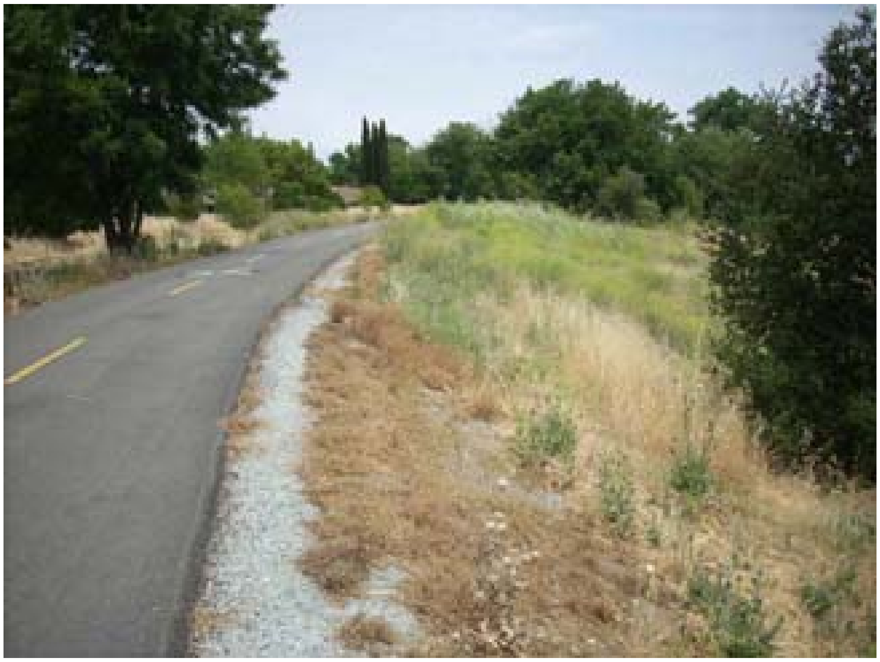
Photograph ID	Approximate Location (Project Station)	Description
189	97+50	North view of inboard levee/stream bank slope



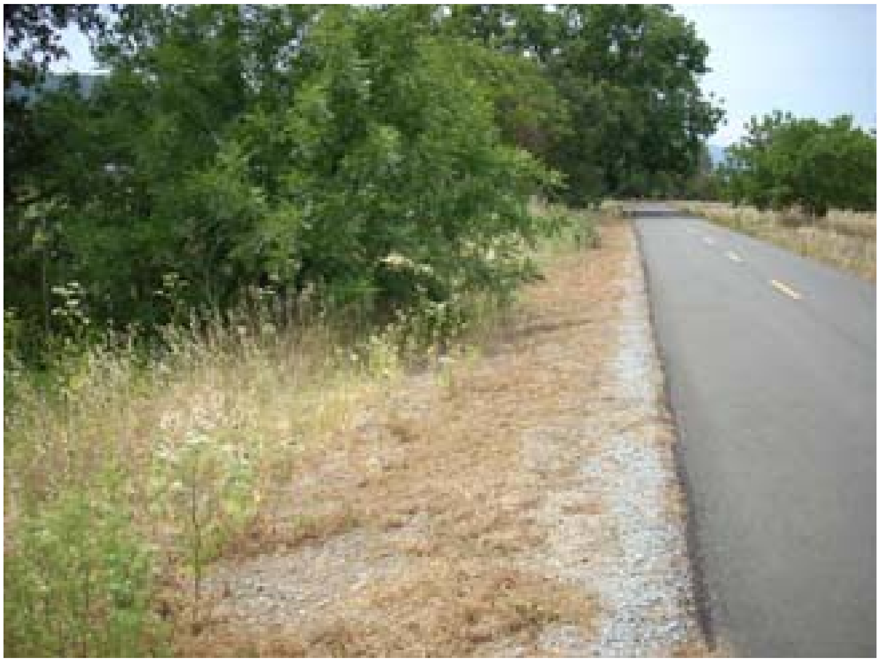
Photograph ID	Approximate Location (Project Station)	Description
190	97+50	North view of outboard levee slope



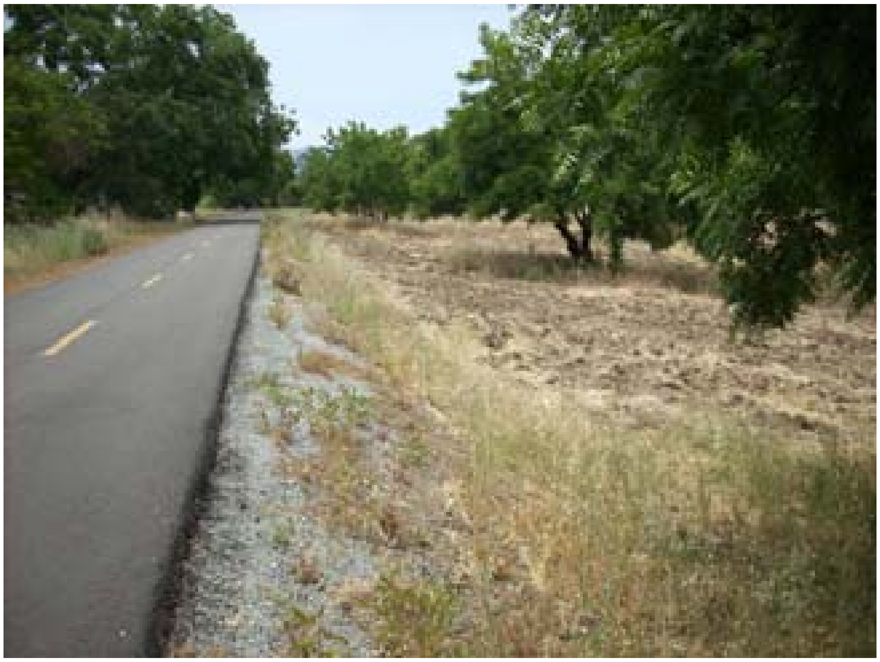
Photograph ID	Approximate Location (Project Station)	Description
191	97+50	South view of outboard levee slope



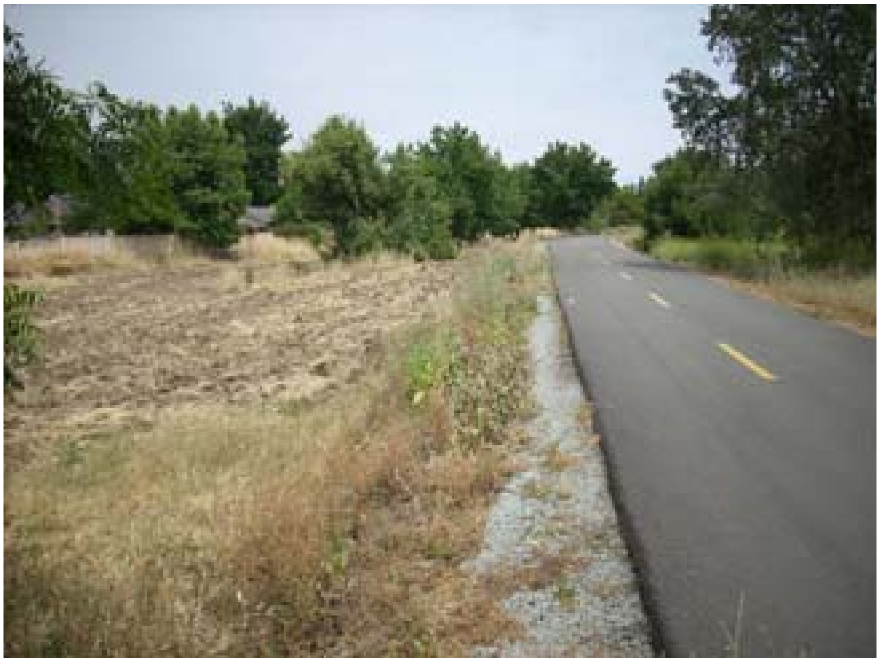
Photograph ID	Approximate Location (Project Station)	Description
192	97+50	South view of inboard levee/stream bank slope



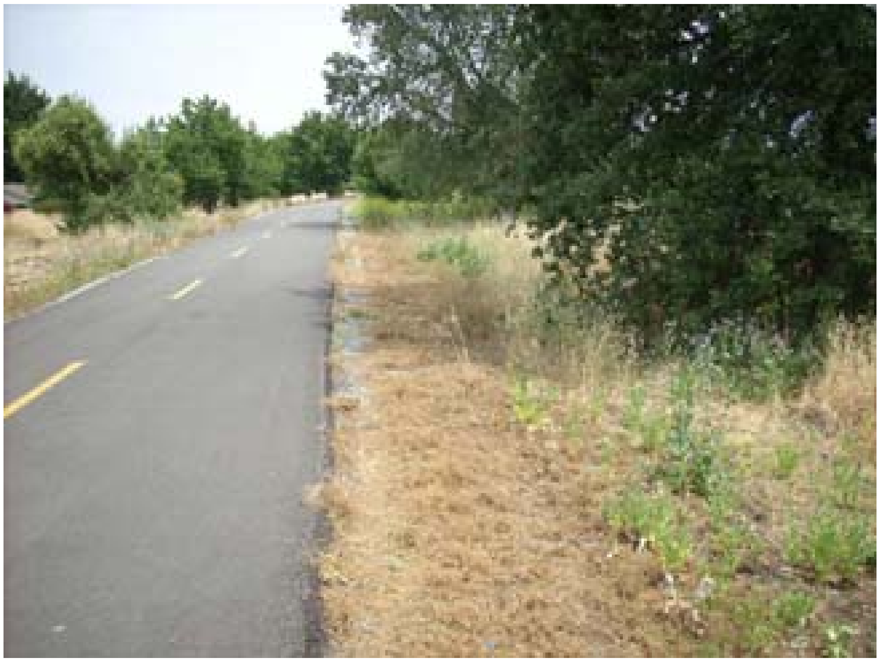
Photograph ID	Approximate Location (Project Station)	Description
193	100+00	North view of inboard levee/stream bank slope



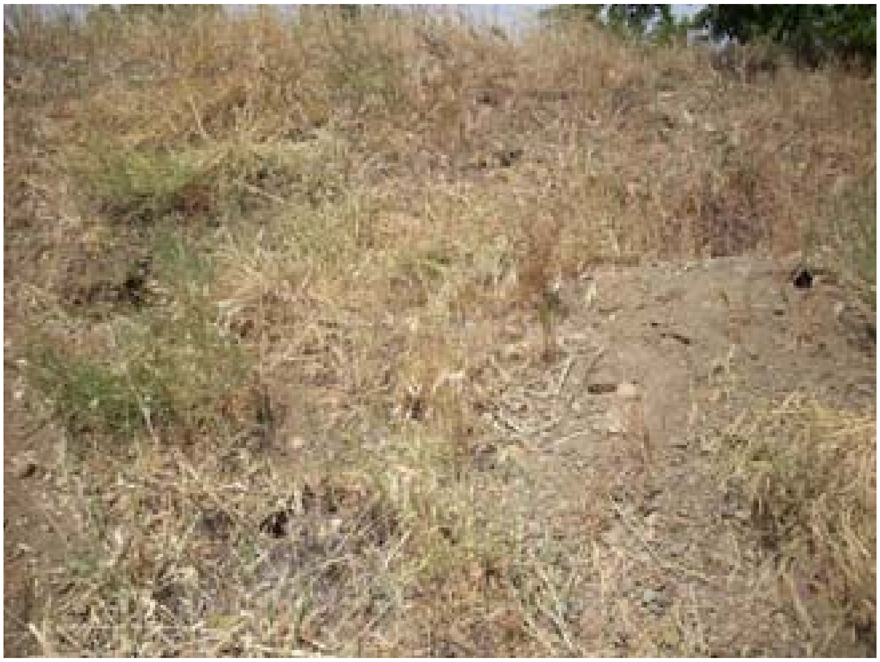
Photograph ID	Approximate Location (Project Station)	Description
194	100+00	North view of outboard levee slope



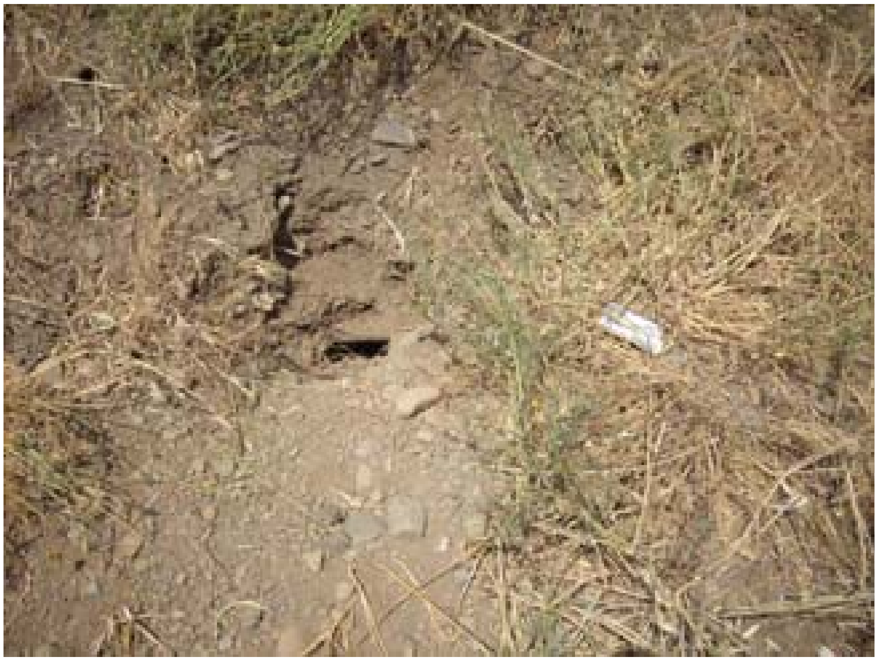
Photograph ID	Approximate Location (Project Station)	Description
195	100+00	South view of outboard levee slope



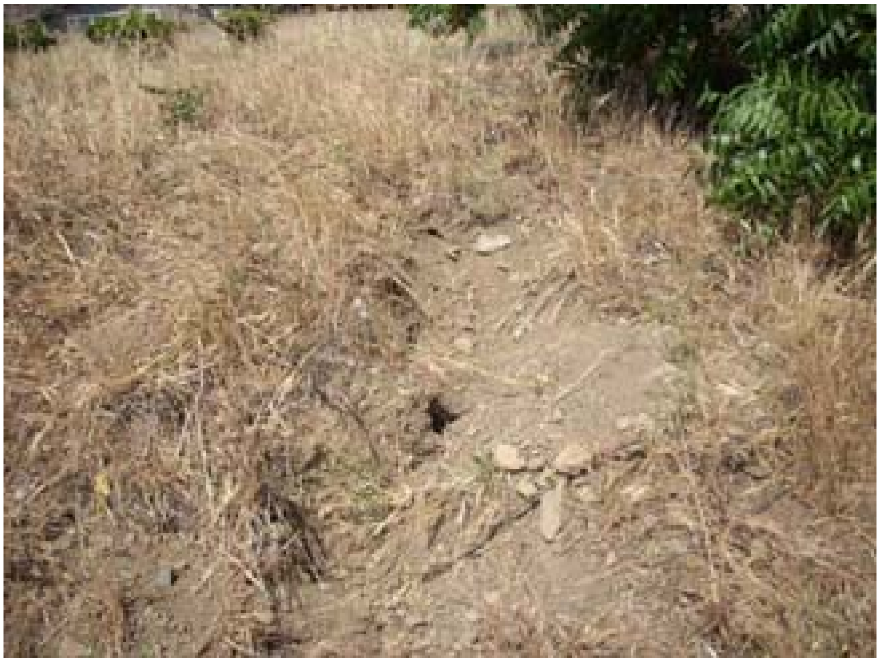
Photograph ID	Approximate Location (Project Station)	Description
196	100+00	South view of inboard levee/stream bank slope



Photograph ID	Approximate Location (Project Station)	Description
197	105+00	Ground squirrel burrows in stream bank slope

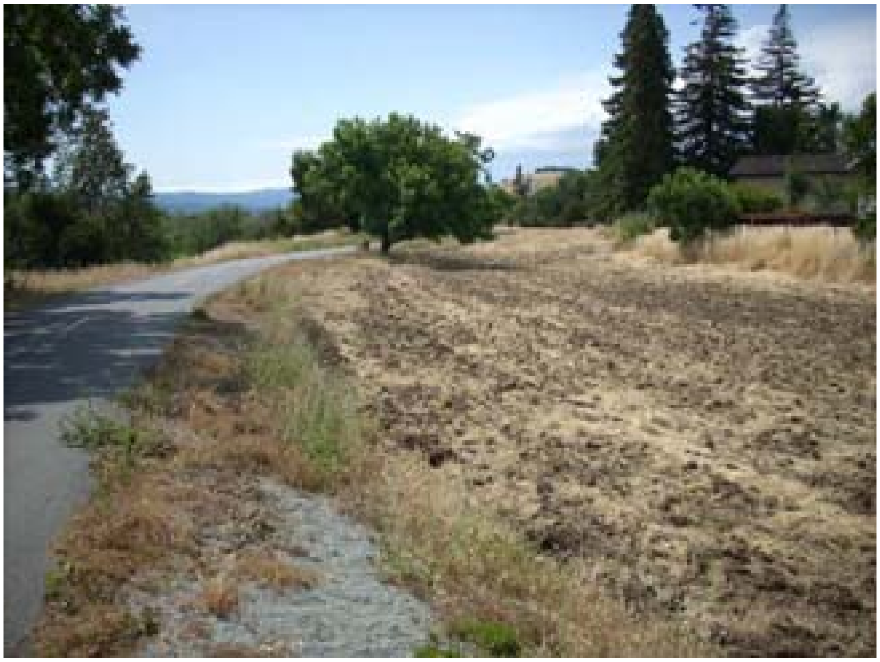


Photograph ID	Approximate Location (Project Station)	Description
198	105+00	Ground squirrel burrows in stream bank slope

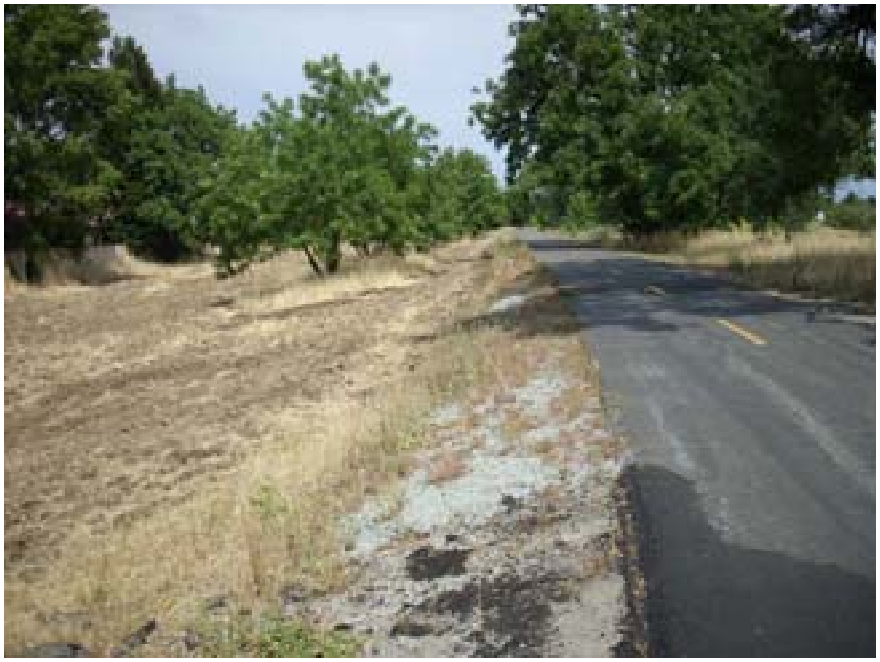


Photograph ID	Approximate Location (Project Station)	Description
199	105+00	Ground squirrel burrows in stream bank slope

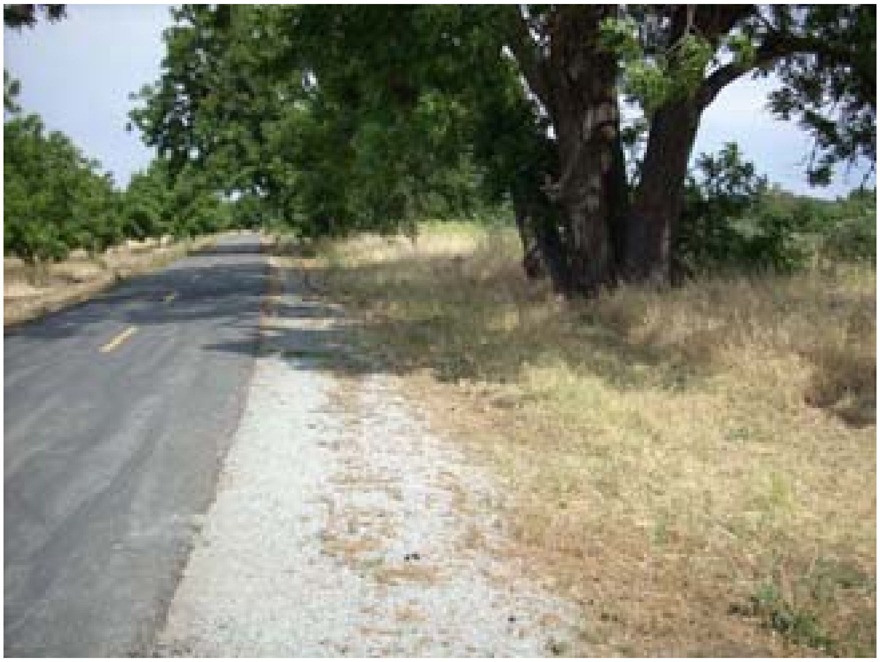
Photograph ID	Approximate Location (Project Station)	Description
200	104+00	North view of inboard levee/stream bank slope



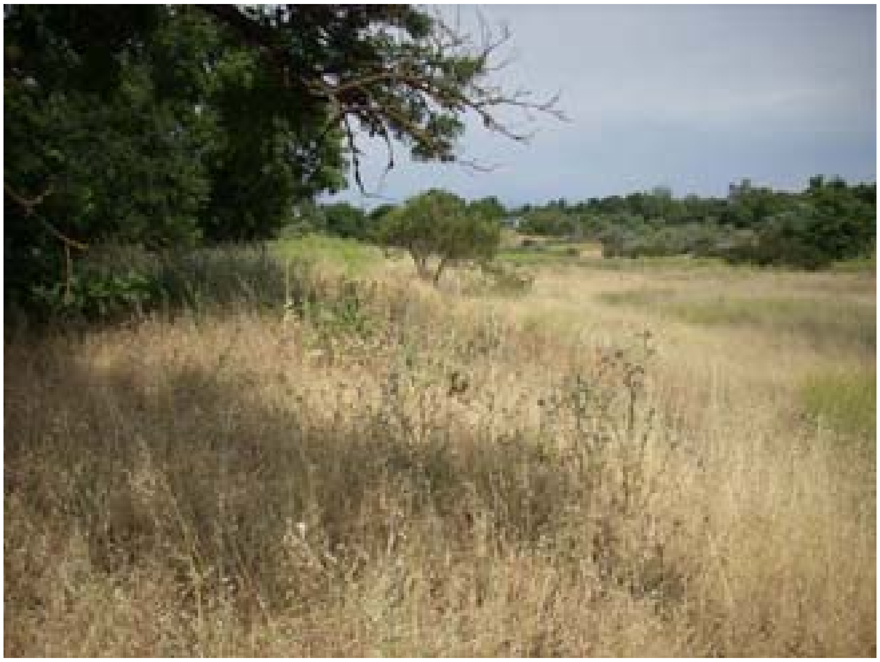
Photograph ID	Approximate Location (Project Station)	Description
201	104+00	North view of outboard levee slope



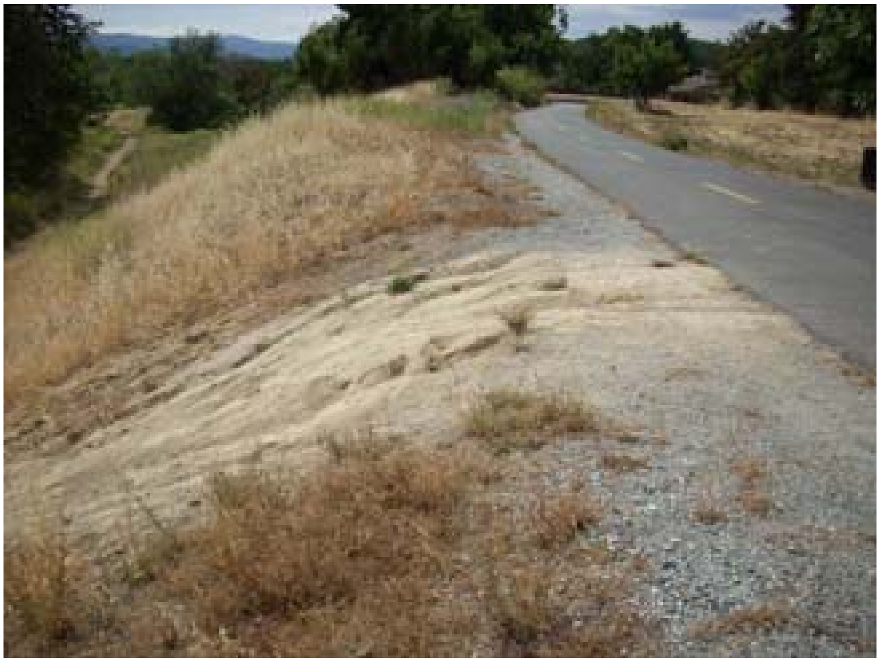
Photograph ID	Approximate Location (Project Station)	Description
202	104+00	South view of outboard levee slope



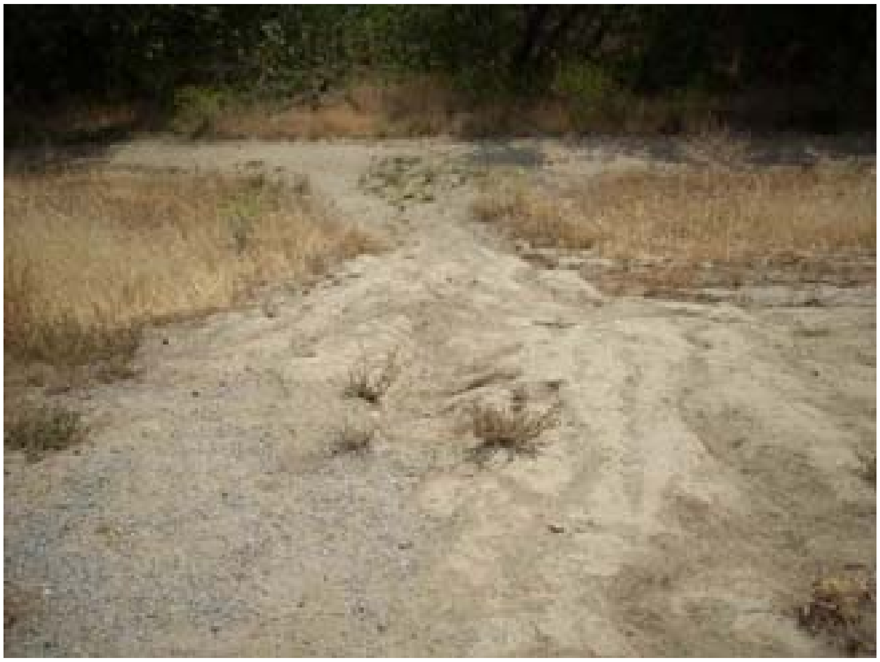
Photograph ID	Approximate Location (Project Station)	Description
203	104+00	South view of inboard levee/stream bank slope



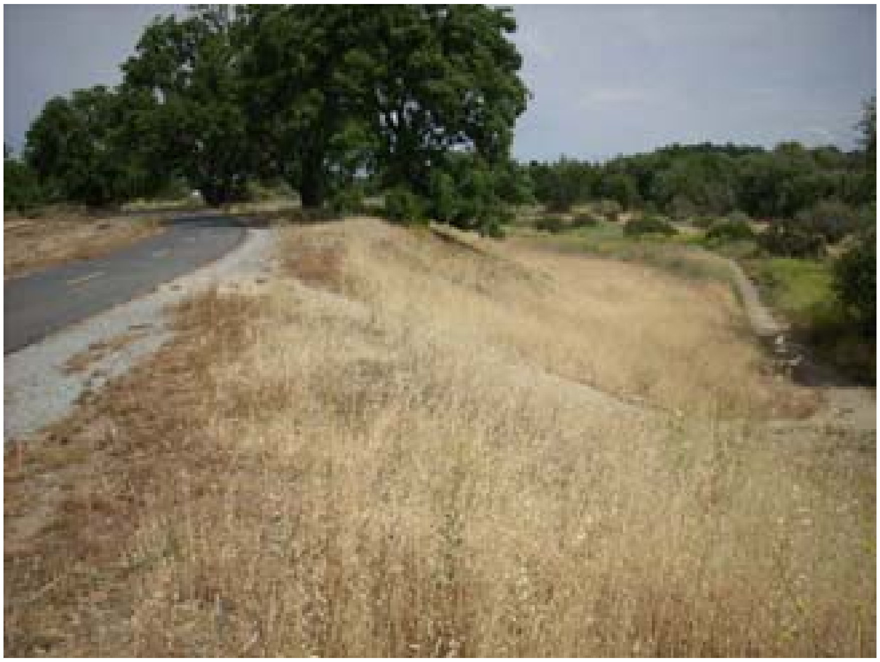
Photograph ID	Approximate Location (Project Station)	Description
204	104+00	South view of stream bank slope about 30’ from inboard toe of levee



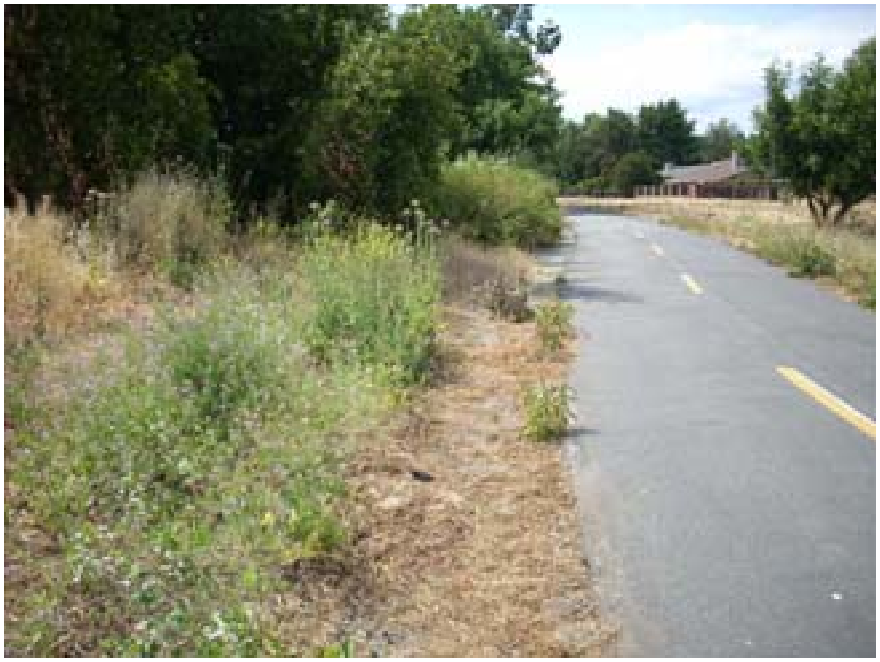
Photograph ID	Approximate Location (Project Station)	Description
205	106+00	Erosion of stream bank slope, north view



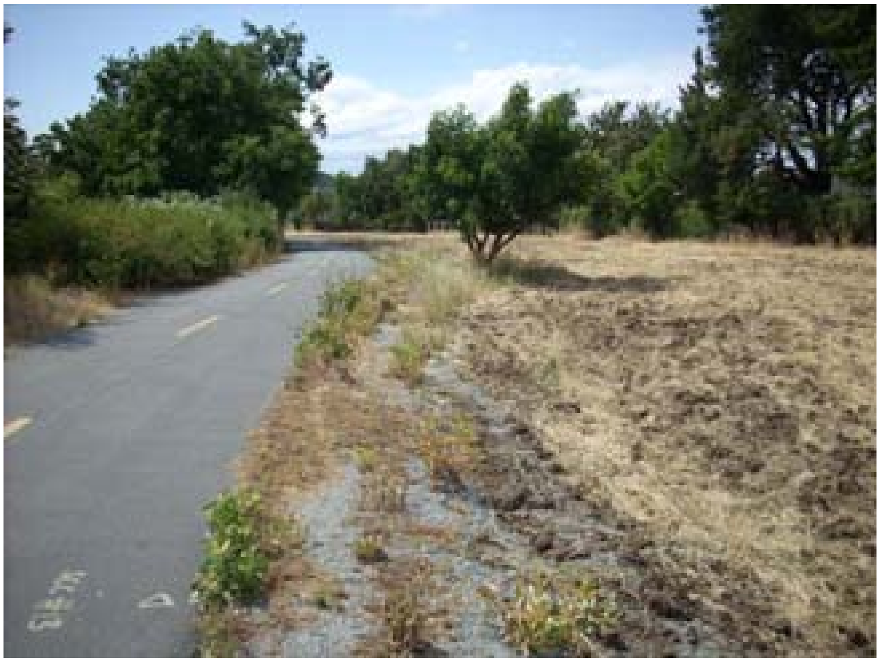
Photograph ID	Approximate Location (Project Station)	Description
206	106+00	Erosion of stream bank slope, west view from bicycle trail



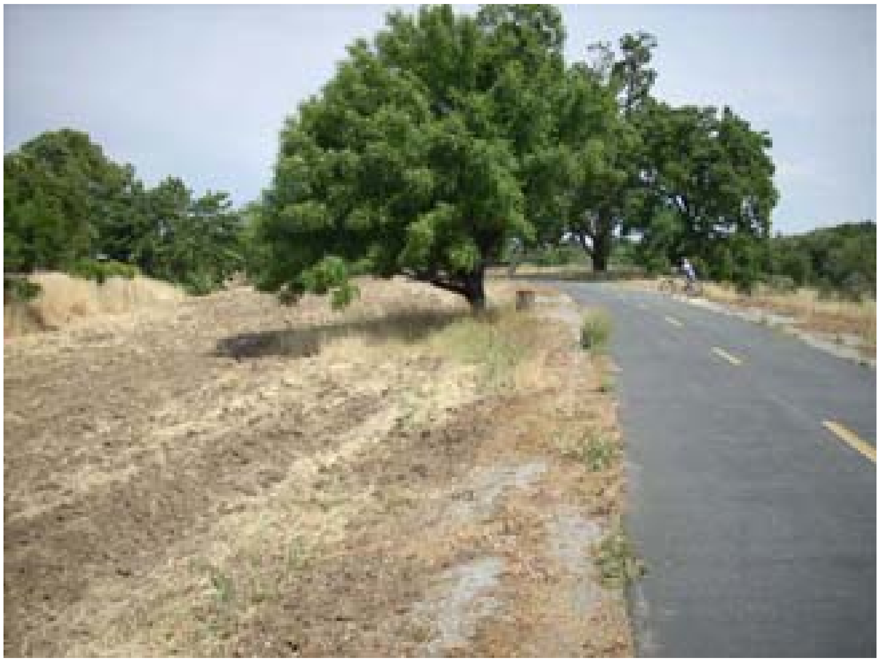
Photograph ID	Approximate Location (Project Station)	Description
207	106+50	South view of stream bank slope



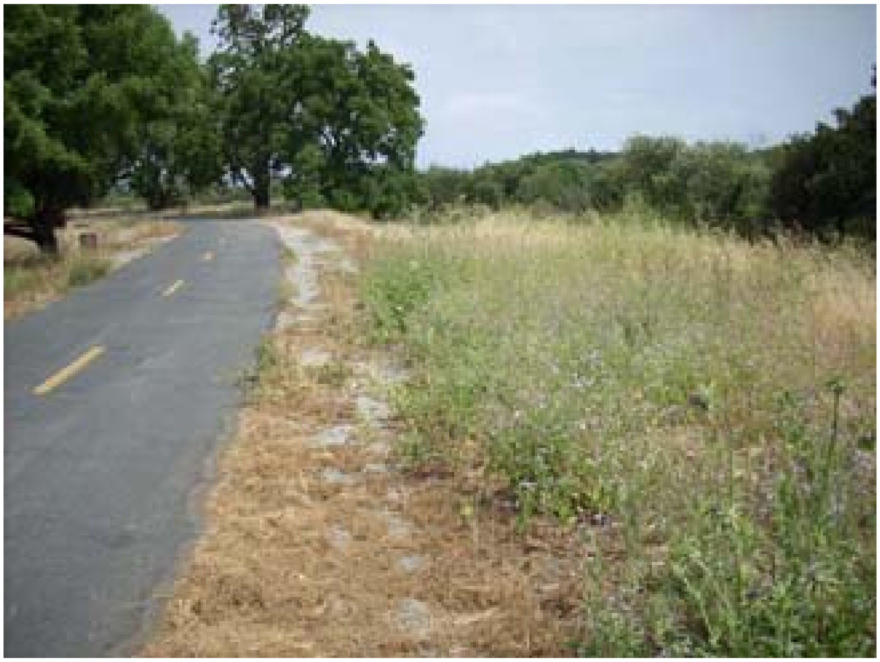
Photograph ID	Approximate Location (Project Station)	Description
208	107+00	North view of inboard stream bank slope



Photograph ID	Approximate Location (Project Station)	Description
209	107+00	North view of outboard slope

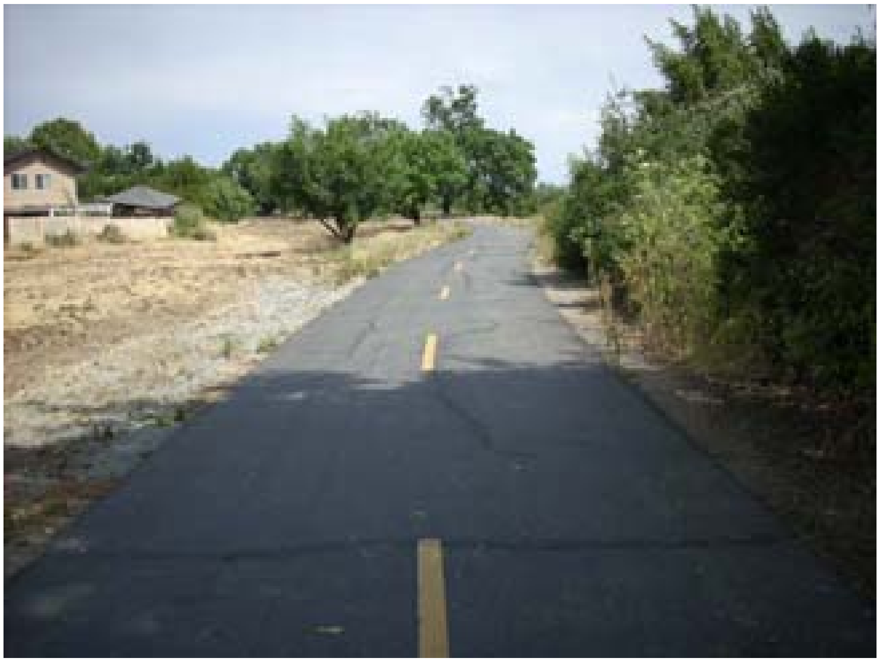


Photograph ID	Approximate Location (Project Station)	Description
210	107+00	South view of outboard slope

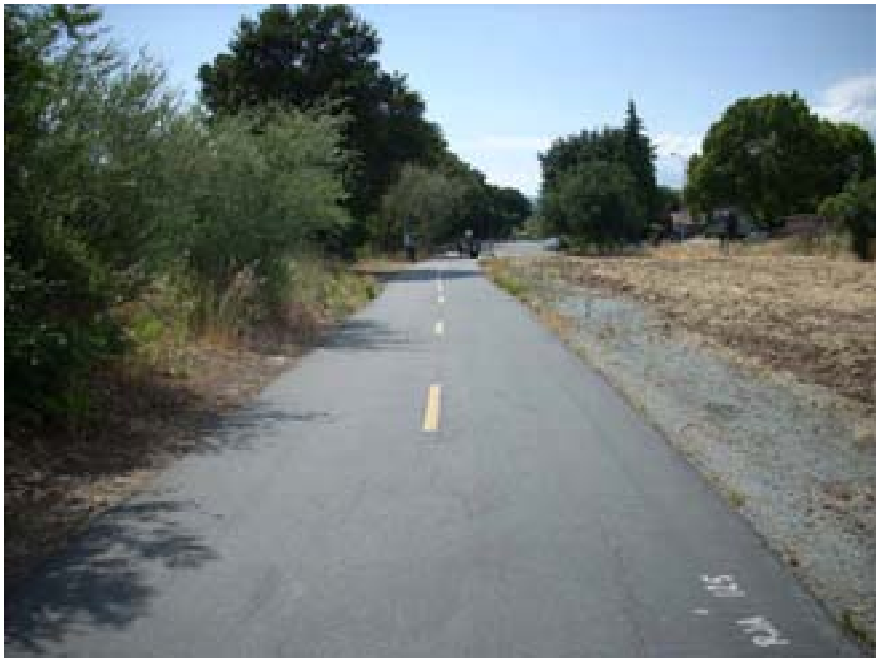


Photograph ID	Approximate Location (Project Station)	Description
211	107+00	South view of inboard stream bank slope

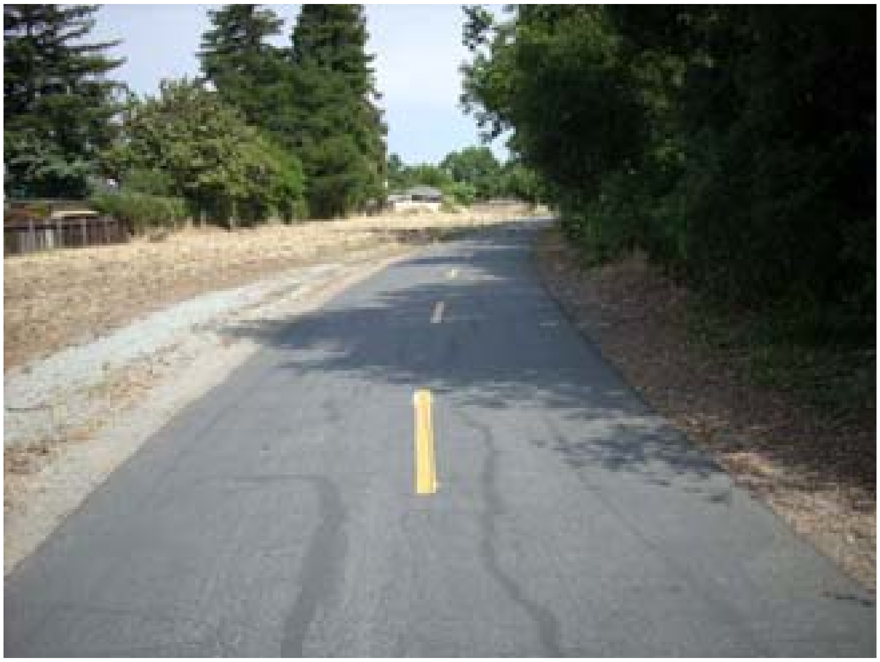
Photograph ID	Approximate Location (Project Station)	Description
212	109+00	North view of trail



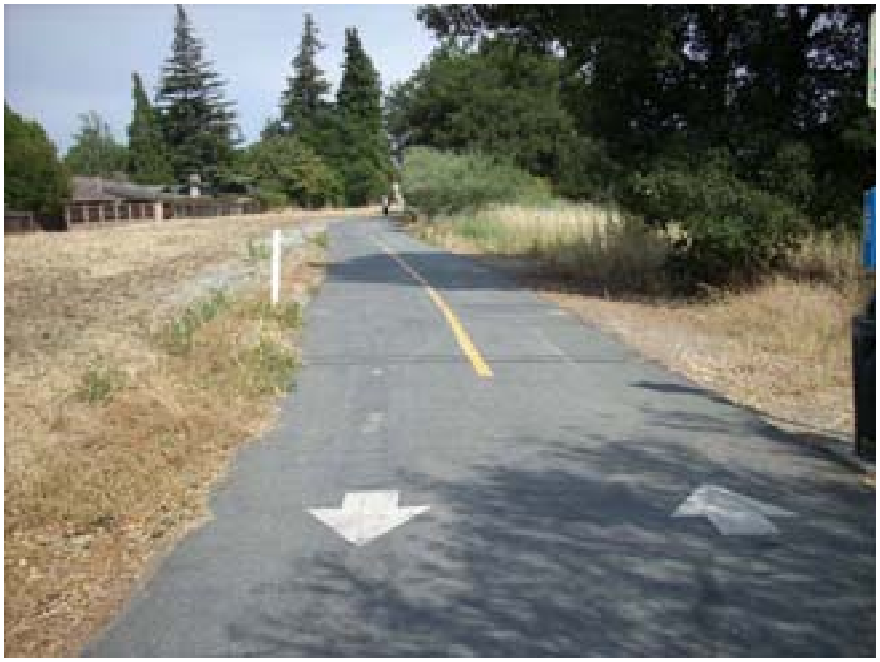
Photograph ID	Approximate Location (Project Station)	Description
213	109+00	South view of trail



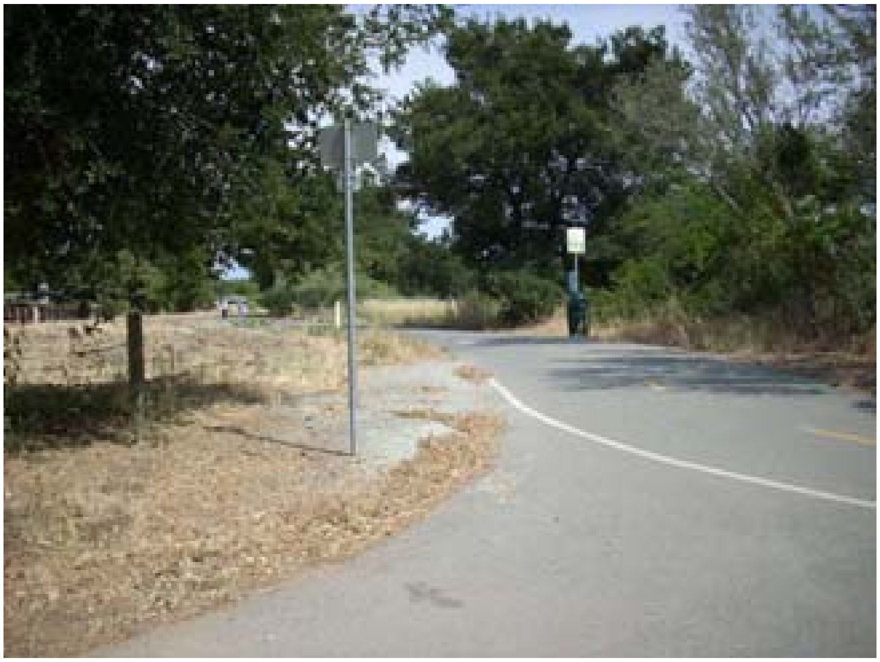
Photograph ID	Approximate Location (Project Station)	Description
214	111+00	North view of trail



Photograph ID	Approximate Location (Project Station)	Description
215	111+00	South view of trail



Photograph ID	Approximate Location (Project Station)	Description
216	113+00	South view of trail



Photograph ID	Approximate Location (Project Station)	Description
217	114+00	South view of trail

ATTACHMENT 3

GPS LOCATIONS AND FEATURE DESCRIPTIONS

TABLE 3

SUMMARY OF GPS SURVEY POINTS AND DESCRIPTIONS

Uvas Creek Levee Recertification Project, Phase B2

Gilroy, California

Point ID	Description	Approximate Station	Approximate Northing (ft)	Approximate Easting (ft)	Approximate Elevation (ft)
1	Utility water box on inboard side of levee near the toe	4+50	13,433,961	2,058,597	203
2	Charter utility communications box, on inboard side of levee near the toe	4+50	13,433,965	2,058,593	202
3	Verison utility communications box, on the inboard side of the levee near the toe	4+50	13,433,969	2,058,592	202
4	Charter utility communications box, on inboard side of levee near the toe	8+50	13,434,308	2,058,470	204
5	Verison utility communications box, on the inboard side of the levee near the toe	8+50	13,434,314	2,058,470	204
6	PG&E electic utility vault, on the inboard side of the levee near the toe	9+00	13,434,366	2,058,445	203
7	Utility water box on inboard side of levee near the toe	9+50	13,434,397	2,058,420	205
8	Storm drain outfall, 18-inch diameter CMP, survey point at top of inboard slope about 4 feet above CMP top and 6 feet west	14+00	13,434,615	2,057,970	213
10	Storm drain outlet, drains inboard slope only, not a full penetration, survey point 4 feet above outlet	18+50	13,434,663	2,057,609	211
11	Storm drain inlet, on the inboard side of the levee	18+50	13,434,714	2,057,602	205
12	Sanitary sewer manhole, on outboard side of levee	21+50	13,434,863	2,057,338	215
13	Storm drain manhole, near levee crest, locked	21+50	13,434,868	2,057,315	216
14	Storm drain outfall, 18-inch diameter CMP, no flap	21+50	13,434,780	2,057,271	200
15	Beginning of MSE wall	20+40	13,434,728	2,057,383	208
16	End of MSE wall	22+80	13,434,921	2,057,207	214
17	Monitoring well on inboard levee toe	33+00	13,434,877	2,056,253	221
18	SCVWD raised well box, on the inboard of the levee	58+30	13,436,480	2,054,290	224
19	SCVWD box with purple casing and bolted lid	58+30	13,436,473	2,054,298	224
20	SCVWD flush-MTD valve	58+30	13,436,480	2,054,296	216
21	SCVWD flush-MTD valve	58+30	13,436,477	2,054,294	215

Point ID	Description	Approximate Station	Approximate Northing (ft)	Approximate Easting (ft)	Approximate Elevation (ft)
22	SCVWD cp test well flush-MTD box	58+30	13,436,479	2,054,277	215
23	Utility box, on inboard side of levee	58+30	13,436,479	2,054,263	219
24	Utility water meter box, on outboard slope near Miller Ave.	69+40	13,437,360	2,053,656	222
25	Storm drain outfall, 18-inch diameter CMP, survey point at CMP invert	72+70	13,437,282	2,053,223	201
26	Storm drain manhole, on outboard side of levee	72+70	13,437,539	2,053,385	216
27	Storm drain catch basin, near outboard levee toe	72+70	13,437,559	2,053,398	213
28	Water utility box, near levee crest	71+40	13,437,478	2,053,484	223
29	Water meter box, near levee crest	71+30	13,437,471	2,053,495	222
30	Storm drain outfall, 30-inch diameter CMP, survey point at CMP invert	82+00	13,437,857	2,052,486	203
31	Storm drain catch basin, near outboard levee toe	80+90	13,437,935	2,052,674	213
32	Storm drain outfall, 24-inch diameter CMP, survey poin at CMP invert	95+00	13,438,900	2,051,717	182
33	Sanitary sewer manhole, on outboard side of levee	95+00	13,439,002	2,051,784	216
34	Sanitary sewer manhole, on outboard side of levee	101+50	13,439,131	2,051,104	214
35	Sanitary sewer manhole, on outboard side of levee	98+50	13,439,133	2,051,412	213
36	Sanitary sewer manhole, on outboard side of levee	92+00	13,438,813	2,051,992	215
37	Sanitary sewer manhole, on outboard side of levee	90+00	13,438,597	2,052,128	216
38	Sanitary sewer manhole, on outboard side of levee	82+00	13,438,024	2,052,590	242
39	Storm drain catch basin, on outboard side of levee	83+00	13,438,073	2,052,542	207

Notes:

1. Northing and easting coordinates per UTM Zone 10 North, NAD 1983 datum.
2. Elevations relative to mean sea level (MSL).
3. Estimated horizontal precisions range from approximately 1 to 3 feet. See post-processing summary for details.
4. Estimated vertical precisions range from approximately 1 to 5 feet. See post-processing summary for details.

GPS Survey Points - Uvas Creek Levee

Post-Processing Summary

Receiver Type: GeoXH 2005
Data File: GPS_points_13815_UVAS_05-22-08

Point_ID	Max_PDOP	Max_HDOP	Corr_Type	GPS_Date	GPS_Time	GPS_Week	GPS_Second	Unfilt_Pos	Filt_Pos	Northing	Easting	GPS_Height	Vert_Prec	Horz_Prec	Std_Dev	Comment
1	2.2	1.1	Postprocessed Code	39590	09:06:36am	1480	407210	16	16	13433961.36	2058597.126	202.807	2	1.4	0.539211	utility water box
2	2.2	1.2	Postprocessed Code	39590	09:09:01am	1480	407355	18	18	13433964.9	2058592.713	201.827	2	1.5	0.415429	utility comm box charter
3	2.2	1.2	Postprocessed Code	39590	09:12:46am	1480	407580	18	18	13433968.82	2058592.345	202.289	1.9	1.5	0.280435	utility comm box verison
4	1.9	1	Postprocessed Code	39590	09:16:26am	1480	407800	18	18	13434308.04	2058470.089	203.626	2	1.6	0.440528	utility comm box charter
5	1.9	1	Postprocessed Code	39590	09:18:41am	1480	407935	17	17	13434313.84	2058469.645	203.604	1.9	1.7	0.598573	utility comm box verison
6	2	1.2	Postprocessed Code	39590	09:21:11am	1480	408085	34	34	13434365.71	2058445.416	203.021	2	1.7	0.649255	utility elec vault pg&e
7	2	1.3	Postprocessed Code	39590	09:24:51am	1480	408305	23	23	13434397.43	2058419.861	205.206	1.8	1.8	0.418591	utility water box
8	5.5	2.1	Postprocessed Code	39590	10:49:31am	1480	413385	20	20	13434614.58	2057969.65	212.927	8.5	3.1	3.626905	sd outfall, loc abt 4' dn & 6' w
10	3.4	2.2	Postprocessed Code	39590	11:07:51am	1480	414485	16	16	13434662.82	2057609.241	210.679	4.8	2.6	16.52355	sd outlet, -4ft vert
11	2.7	1.5	Postprocessed Code	39590	11:10:46am	1480	414660	20	20	13434714.13	2057602.182	205.1	3.1	1.7	0.615436	sd inlet
12	2.8	1.4	Postprocessed Code	39590	01:27:31pm	1480	422865	17	17	13434862.66	2057337.998	215.195	2.6	1.4	1.200066	utility ss mh
13	2.6	1.2	Postprocessed Code	39590	01:30:16pm	1480	423030	17	17	13434868.07	2057315.477	216.174	2.4	1.3	0.723538	sd manhole
14	5.8	2.4	Postprocessed Code	39590	01:34:31pm	1480	423285	20	20	13434780.11	2057271.476	200.005	2.9	2.5	1.577771	sd outfall 18-in cmp
15	2.4	1.4	Postprocessed Code	39590	01:40:41pm	1480	423655	16	16	13434728.12	2057382.955	208.296	2.4	1.3	0.899866	begin mse wall
16	2.3	1.2	Postprocessed Code	39590	01:43:46pm	1480	423840	18	18	13434920.99	2057207.469	213.73	2.5	2.1	1.294601	end mse wall
17	2.1	1.2	Postprocessed Carrier Float	39590	03:46:46pm	1480	431220	21	21	13434876.54	2056252.9	220.825	1.9	1.1	0	monitoring well
18	2.8	1.5	Postprocessed Code	39591	08:35:36am	1480	491750	16	16	13436479.58	2054290.112	224.326	2.6	1.5	1.292908	raised well box scvwd
19	3.6	1.9	Postprocessed Code	39591	08:38:11am	1480	491905	19	19	13436473.05	2054297.598	223.987	3.7	2.2	2.861653	casing w/ bolted lid scvwd
20	3.9	1.4	Postprocessed Code	39591	08:40:56am	1480	492070	33	33	13436480.16	2054296.001	216.001	2.8	1.5	0.559712	flush-mtd valve scvwd
21	2.9	1.3	Postprocessed Code	39591	08:44:46am	1480	492300	20	20	13436476.89	2054294.312	215.275	2.9	1.7	0.795813	flush-mtd box scvwd
22	3	1.8	Postprocessed Code	39591	08:47:31am	1480	492465	18	18	13436478.78	2054277.32	215.193	2.8	2.1	1.387991	cp test well flush-mtd box
23	3.9	1.5	Postprocessed Code	39591	08:49:56am	1480	492610	48	48	13436479.47	2054263.151	219.151	3.4	1.7	1.233656	utility electrical box
24	3.5	1.6	Postprocessed Carrier Float	39591	01:00:11pm	1480	507625	32	32	13437360.2	2053655.773	222.38	1.4	0.7	0	utility water meter box
25	2.6	1.2	Postprocessed Carrier Float	39595	07:54:31am	1481	230085	29	29	13437282.25	2053222.915	200.575	0.9	0.4	0	storm drain outfall 18" cmp
26	2.6	1.2	Postprocessed Carrier Float	39595	08:02:21am	1481	230555	25	25	13437538.53	2053385.327	216.472	0.7	0.3	0	storm drain manhole
27	2.6	1.2	Postprocessed Carrier Float	39595	08:05:16am	1481	230730	20	20	13437559.11	2053397.867	212.597	0.8	0.4	0	storm drain catch basin
28	2.6	1.2	Postprocessed Carrier Float	39595	08:09:36am	1481	230990	22	22	13437478.29	2053483.763	222.549	0.7	0.3	0	utility water box
29	2.6	1.2	Postprocessed Carrier Float	39595	08:12:11am	1481	231145	20	20	13437471.41	2053495.086	221.77	0.7	0.4	0	utility water meter box
30	1.9	1	Postprocessed Carrier Float	39595	08:32:51am	1481	232385	21	21	13437856.83	2052486.282	202.881	1	0.6	0	storm drain outfall 30" cmp
31	2.1	1.1	Postprocessed Carrier Float	39595	08:41:56am	1481	232930	19	19	13437934.52	2052673.994	213.448	0.8	0.6	0	storm drain catch basin
32	5.7	2	Postprocessed Carrier Float	39595	10:29:46am	1481	239400	21	21	13438900.16	2051717.239	181.607	4.5	1.4	1.050254	storm drain outfall
33	2.5	1.1	Postprocessed Carrier Float	39595	10:39:26am	1481	239980	20	20	13439001.71	2051783.726	216.499	1.3	0.5	0	utility manhole ss
34	2.8	2.1	Postprocessed Carrier Float	39595	12:04:36pm	1481	245090	10	10	13439130.85	2051103.898	214.36	1.6	1	0	ss manhole
35	3.7	2.1	Postprocessed Carrier Float	39595	12:09:11pm	1481	245365	13	13	13439133.19	2051411.536	213.491	2.6	1.3	0.524918	ss manhole
36	3.7	2	Postprocessed Carrier Float	39595	12:22:41pm	1481	246175	16	16	13438812.91	2051991.934	214.591	4.2	2	0	ss manhole
37	3.7	2	Postprocessed Carrier Float	39595	12:25:51pm	1481	246365	11	11	13438597.35	2052128.161	216.203	4.2	2	0	ss manhole
38	3.7	2	Postprocessed Carrier Float	39595	12:33:01pm	1481	246795	4	4	13438024.32	2052589.764	241.85	4.7	2.3	0.434908	ss manhole
39	3.7	2	Postprocessed Carrier Float	39595	12:34:56pm	1481	246910	9	9	13438072.67	2052542.124	207.141	3.3	1.6	0	sd catch basin

Coordinate System:	UTM
Coordinate Zone:	10 North
Datum:	NAD 1983 (Conus)
Coordinate Units:	US Survey Feet
Altitude Units:	US Survey Feet
Altitude Reference:	MSL
Geoid Model:	EGM96 (Global)
Distance Units:	US Survey Feet
Area Units:	Square Feet
Velocity Units:	Feet Per Second
Precision Units:	US Survey Feet

APPENDIX B

Loma Prieta Levee Performance Records

File 8264-007

CERTIFIED MAIL RETURN RECEIPT REQUESTED

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT CORPS OF ENGINEERS
650 CAPITOL MALL
SACRAMENTO, CALIFORNIA 95814-4794

REPLY TO
ATTENTION OF

January 30, 1989

2/6 Certified Mail

cc: KRS
JTD
DME
KEJ
RRT
SNW

Navigation and Flood Control Unit

Mr. Robert R. Smith, Flood Control Manager
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118

Dear Mr. Smith:

This is in regard to the joint inspection of January 6, 1989, made for the purpose of transferring a completed portion of the Pajaro River California Project to your District for operation and maintenance. The work was authorized by the Flood Control Act of 1944, 78th Congress, 2nd Session (Public Law 78-534).

The completed work consists of levee improvement and construction, Phase II, on Uvas Creek (Station 0+00 to Station 29+00) at Gilroy, California.

The work was completed on January 6, 1989, in accordance with Contract Number DACW05-88-C-0052, Specification Number 8350 and Drawing Number PA-18-04-06. The patrol road and bike trail paving (Station 23+20 to 29+00) will be completed simultaneously with the Thomas Road construction later this spring. Therefore, this completed work together with the waterway banks and floodway contiguous thereto, is hereby transferred to the Santa Clara Valley Water District as of January 6, 1989, for operation and maintenance in accordance with the local cooperation agreement signed on June 25, 1987 and Code of Federal Regulations, Title 33, Part 208, Flood Control Regulations (copy enclosed).

This work is described in detail in the Operation and Maintenance Manual for this project which your district is currently reviewing. Written acceptance of the completed work is requested.

For information regarding future operation, maintenance and inspections of the completed work please contact Mr. Kelly Aasen, San Francisco District Corps of Engineers at (415) 974-7066.

Sincerely,

Jack A. Le Cuyer
Colonel, Corps of Engineers
District Engineer

Enclosure

File 175543-001

DSR NO: 92292
SUPP TO DSR:

DATE: 02/01/90
TIME: 08:36AM

FEDERAL EMERGENCY MANAGEMENT AGENCY
DAMAGE SURVEY REPORT
PART I - PROJECT DESCRIPTION

COUNTY - SANTA CLARA

APPLICANT NAME - SANTA CLARA VALLEY WATER DISTRICT

INSPECTION DATE: 01/22/90

PROJECT TITLE - LEVEE
DAMAGED FACILITY - LLAGAS CREEK LEVEE

East of Hwy 101

DISASTER NO: 0845
P.A.ID 085-91005

Scope: 50104

LOCATION - LLAGAS CREEK, WEST OF BLOOMFIELD AVENUE, G-7

CATEGORY D
PROJECT NO: 499
% COMPLETE 0
WORK ACCOM BY: FORCE ACCT CONT

DAMAGE DESCRIPTION AND SCOPE OF ELIGIBLE WORK:

LEVEE REPAIRS IN THREE SITES, 224' LENGTH. EXCAVATE, FILL AND COMPACT.

RECOMMENDATION BY INSPECTOR	INSP NO.	AGENCY	ELIGIBLE	F.O
FEDERAL - DOMPIER, CHARLES	9456	TAC	Y	
STATE - PINTO, CARLOS	9671	OES		
LOCAL - JOSE L ORTIZ				

PART II - ESTIMATED COST OF PROPOSED WORK

ITEM	CODE	MATERIAL AND/OR DESCRIPTION	UNIT	QTY	UNIT PRICE	COST
1	9007	LABOR	LS	1.00	$2,115.36	$2,115.36
2	8426	TRACTOR, CRAWLER TO 310 HP	HR	24.00	$52.00	$1,248.00
3	9999	GRADALL	HR	24.00	$75.86	$1,820.64
4	9999	ROLLERS -TOWED	HR	24.00	$3.75	$90.00
5	8523	TRUCK TO 150 HP	HR	16.00	$10.00	$160.00
6	3510	ENGINEERING AND DESIGN SERVICES	LS	1.00	$597.74	$597.74
					TOTAL:	$6,031.74

PART III - FLOOD PLAIN MANAGEMENT/HAZARD MITIGATION REVIEW

IN OR AFFECTS FLOODPLAIN OR WETLAND	FLOODPLAIN LOCATION	% DAMAGE	DISASTER HISTORY	LAND USE	FPM RECOMMENDATION
F	1	4	U	U1 - D	5

PART IV - FOR FEMA USE ONLY

AMOUNT	ELIGIBLE	SPECIAL CONSIDERATIONS	FLOODPLAIN REV. NO.	WORKSITE
$6,032.00	Y			

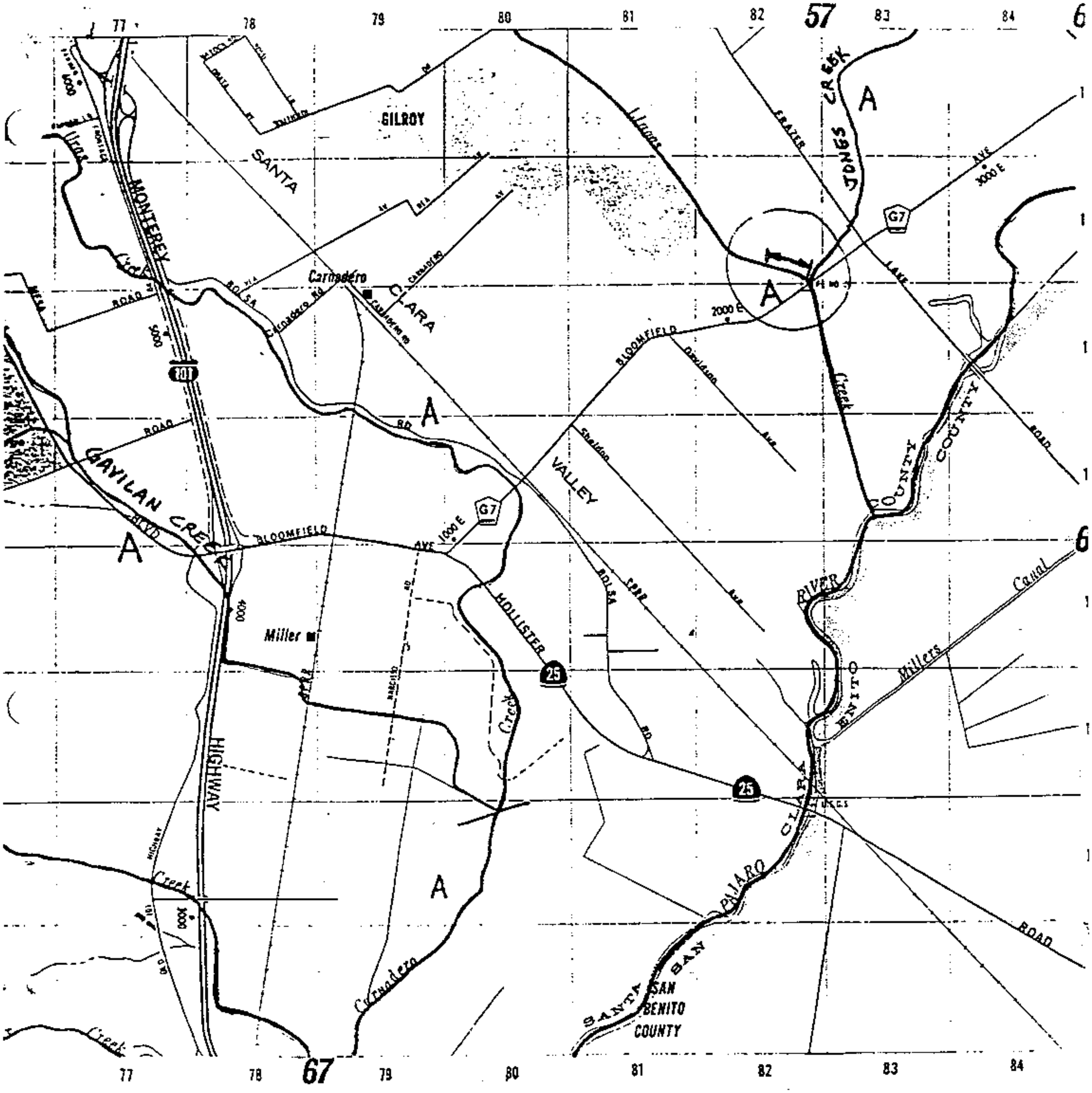
SUPP# DATE PAPPED

INSURANCE COMMITMENT REQUIRED

TYPE AMOUNT YEARS

FEMA REVIEWER Mike C Mich DATE FEB 7 1990

DSR NO: 92292



P.A 025-91005
D.S R
Page 1 of 10

DAMAGE SURVEY CONTINUATION SHEET

Applicant SANTA CLARA COUNTY WATER DIST.			Date 1-22-90	Sheet 2
Disaster No. 845	P.A. No. 085-91005	Work Category: ☐Emergency ☒Permanent ☐A ☐B ☐C ☒D ☐E ☐F ☐G ☐H ☐I	DSR No. 092292	Supp. N

Sketches and/or Narrative

INSPECTION OF LLAGAS CREEK LEVEE.

DURING INSPECTION OF THE LEVEE ON 1-22-90 WE FOUND THAT DUE TO THE OCT. 17, 1989 EARTH QUAKE, THREE AREAS OF THE LEVEE HAD CRACKED AND CAUSED SETTLEMENT IN THE FOLLOWING LOCATIONS, WEST OF THE BLOOMFIELD ROAD BRIDGE ON THE N.W. SIDE OF LLAGAS CREEK. USING THE BRIDGE AS STA 0+00 THE FIRST CRACK WAS AT STA 1+63 TO 2+08 THE 2ND CRACK WAS AT STA 2+65 TO 3+43 AND THE 3ND CRACK WAS AT STA 4+00 TO 4+41. COST EST. FOR REPAIRS ARE BASED ON LENGTH OF CRACK PLUS 10 FOOT EACH END FOR WORK AREA. NOTE NO IMPORTED MATERALS WILL BE NEED FOR LEVEE REPAIR.

DAMAGE SURVEY CONTINUATION SHEET

Applicant SANTA CLARA WATER DISTRICT		Date 1-22-90	Sheet 3 of 10
Disaster No. 845	P.A. No. 085-91005	Work Category: ☐ Emergency ☒ Permanent ☐A ☐B ☐C ☒D ☐E ☐F ☐G ☐H ☐I	DSR No. 092292
			Supp. No.

Sketches and/or Narrative

TYPICAL SECTION

STA 51+00 THRU STA 61+85

SCALE 1" : 20'

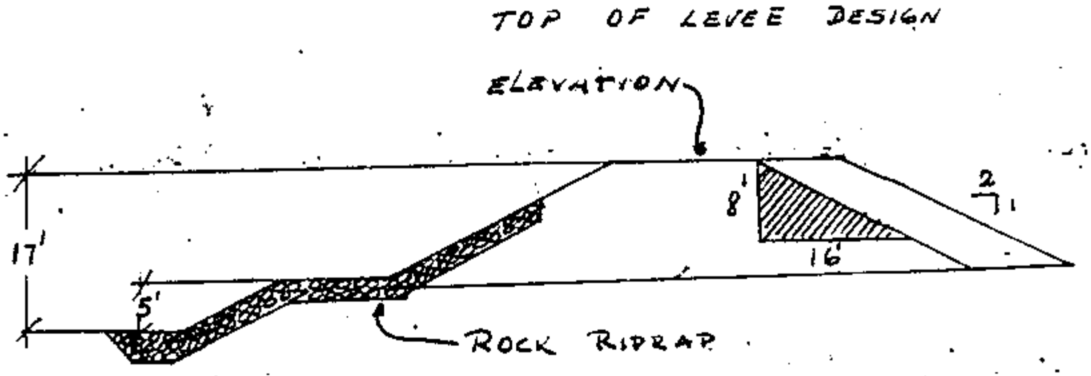


FIG 1

℄ STA

1+63 to 2+08 = 45' + 20' = 65'

2+65 to 3+43 = 78' + 20' = 98'

4+00 to 4+41 = 41' + 20' = 61'

224'

TOTAL LENGTH 224'

FIG. #1

DAMAGE SURVEY CONTINUATION SHEET

Applicant SANTA CLARA WATER VALLEY DIST.			Date 1-22-90	Sheet 4 of 10
Disaster No. 845	P.A. No. 085-91005	Work Category: ☐ Emergency ☒ Permanent ☐A ☐B ☐C ☒D ☐E ☐F ☐G ☐H ☐I	DSR No. 092292	Supp. No.

Sketches and/or Narrative

SHADED AREA (SEE FIG. 1)

8' × 16' × 0.5 = 64 S.F.

64 S.F. × 224 L.F = 14,336. C.F.

14336 C.F. × $\frac{1 \text{ C.Y.}}{27 \text{ C.F}}$ = 531 C.Y.

TRACTOR D 6 D ITEM No 2

(24) TWENTY FOUR HOURS $52/HR

$52 × 24 = $ 1,248.-

LABOR (OPERATOR) ITEM No 1

(24) TWENTY FOUR HOURS OF LABOR $34.81/HR.

$34.81 × 24 = $ 835.44

NOTE.: ALL LABOR COSTS .. U.S. DEPARTMENT OF LABOR.

DAMAGE SURVEY CONTINUATION SHEET

Applicant SANTA CLARA WATER VALLEY DIST.		Date 1-22-90		Sheet 5 of 10
Disaster No. 845	P.A. No. 085-91005	Work Category: ☐Emergency ☒Permanent ☐A ☐B ☐C ☒D ☐E ☐F ☐G ☐H ☐I	DSR No.	Supp. No.

Sketches and/or Narrative

GRADALL. . APPLICANTS COST FOR EQUIPMENT RATE IS LOWER THAN EQUIPMENT RENTAL RATES STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

(24) TWENTY FOUR HOURS $75.86/HR.

$75.86 × 24 = $1820.64 ITEM No 3

LABOR (OPERATOR) ITEM No 1

(24) TWENTY FOUR HOORS $34.81/HR.

$34.81 × 24 = $835.44

ROLLERS, SHEEPSFOOT TOWED ITEM No 4

(24) TWENTY FOUR HOURS $3.75/HR.

$3.75 × 24 = $90

NOTE - CALIFORNIA DEPARTMENT OF TRANSPORTATION RATE

DAMAGE SURVEY CONTINUATION SHEET

Applicant SANTA CLARA WATER VALLEY DIST		Date 1-22-90	Sheet 6 of 10
Disaster No. 845	P.A. No. 085-91005	Work Category: ☐Emergency ☒Permanent ☐A ☐B ☐C ☒D ☐E ☐F ☐G ☐H ☐I	DSR No. 092292
			Supp. No.

Sketches and/or Narrative

TRUCK (MOBILIZATION) ITEM No 5

(16) SIXTEEN HOURS $10./HR.

$10 x 16 = 160.-

LABOR, TEAMSTER ITEM No 1

(16) SIXTEEN HOURS $27.78/HR.

$27.78 x 16 = $444.48

ENGINEERING SOILS ITEM No. 6

TOTAL COSTS $ 2,115.36+1,248+1,820.6+90+160 =

$5434. x 0.11 % = $597.74

TOTAL ITEM No 1

835.44 + 835.44 + 444.48 = $2,115.36

DAMAGE SURVEY CONTINUATION SHEET

Applicant SANTA CLARA WATER DISTRICT			Date 1-22-90	Sheet 7 of 10
Declara.No FEMA 845	PA No 085-91005	Category ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F ☐ G ☒ Perm. ☐ Emer.	DSR No. 092292	Supp. to

RAPHS

1

Photo No.: 1

Item No. :

Description : BRIDGE ON BLOOM FIELD ROAD, OVER WATER CHANNEL (LLAGAS CREEK)

2

Photo No. : 2

Item No. :

Description : NORTH WEST SIDE OF THE CHANNEL 20' CROWN LEVEE

DAMAGE SURVEY CONTINUATION SHEET

Applicant SANTA CLARA WATER DISTRICT

Date 1-22-90

Sheet 8 of 10

Declara. No FEMA 845

PA No 085-91001

Category ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F ☐ G

☒ Perm. ☐ Emer.

DSR No. 092292

Supp. to

PHOTOGRAPHS

3

Photo No.: 3

Item No. :

Description : CRACKS AND SETTEMENTS ON THE LEVEE 41' LENGTH 8' DEEP

4

Photo No. : 4

Item No. :

Description : CRACK 78' LENGTH 8' DEEP

DAMAGE SURVEY CONTINUATION SHEET

Applicant SANTA CLARA WATER DISTRICT		Date 1-22-90	Sheet 9 of 10
Declara.No FEMA 845	PA No 085-91005	Category ☒ Perm. ☐ Emer. ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F ☐ G	DSR No. 092292	Supp. to

PHOTOGRAPHS

5

Photo No.: 5

Item No. :

Description : CRACKS 8' DEEP AND 78' LENGTH LEVEE NEEDS TO BE REPAIRED

6

Photo No. : 6

Item No. :

Description : SAME AS PHOTO ABOVE

File [illegible]

file

5018
COORD: USCofE
Gen.

CORRECTED COPY

September 12, 1990

District Engineer
San Francisco District
U. S. Army Corps of Engineers
211 Main Street
San Francisco, A 94105-1905

Ladies and Gentlemen:

The semi-annual report for the period of November 1, 1989 to April 30, 1990 for the Uvas Creek Levee project, Santa Clara County, California is as follows:

a) The mitigation plantings are still under contract for the 2-year establishment period that began May 24, 1989. We do anticipate minor vegetation removal in the channel between Thomas Road and Hollister Road in the next period.

b) During this report period, there were no major high water periods.

c) In our last report, we noted that the bike trail has several extensive longitudinal cracks in the pavement along Gilroy High School. In subsequent inspections we found that pavement cracking extends over most of the bike trail. The City of Gilroy is responsible for maintenance of the bike trail, but their contention is that the cracks stem from improper construction of the paved bike trail. To date, the Corps has not responded to this point.

d) No permits have been issued for improvements or construction within the project right of way.

e) There is no status of previously indicated maintenance measures because there were none in the first semi-annual report for the Uvas Creek Levee project.

f) The fiscal statement of the Superintendent's operations for the current period is attached. The total cost for work performed was $1,877.40. The only work needed was to modify the lock boxes on the various gates.

Sincerely,

ORIGINAL SIGNED BY

Jose L. Ortiz
Division Engineer
Maintenance Planning Division

Attachments

cc: D. Erling (w/ attachments), J. Ortiz, J. Cooper, B. Wilson, G. Stevens, M. Wander

GS:rmo:GS9-7.LTR

APPENDIX C

Previous Data

ATTACHMENT C.1 Logs of Borings by U.S. Army Corps of Engineers (1987)

ATTACHMENT C.2 Logs of Borings by Ruth and Going, Inc. (1988)

APPENDIX C

DATA REVIEW

Uvas Creek Levee Recertification
Gilroy, California

As part of our evaluation of subsurface conditions for the subject levees, AMEC compiled and reviewed geologic and geotechnical information in the vicinity of the subject levees contained in our files and the archives of the Santa Clara Valley Water District. The site map and boring logs from relevant previous subsurface investigations are provided for reference and included in this appendix. The locations or previous explorations are also indicated on Figures 2, 3, 4, and 5 of this report.

It should be noted that the files we reviewed may not include all the geologic/geotechnical investigation reports prepared for projects in the vicinity of the subject levees. In addition, this report does not include all the information for the study area that is available in the archives reviewed by AMEC. Only the information we judged to be most pertinent to the present study is included in this appendix.

Because the information presented in this appendix does not completely describe the evaluation and exploration techniques used or the subsurface and groundwater conditions encountered, the reader may want to review the original reports from which the information was excerpted. The logs included in this appendix should be considered to depict subsurface conditions only at the specific locations and at particular times the exploration work was performed and/or water levels were measured. Soil and groundwater conditions at other locations may differ from the conditions occurring at these locations. Also, the passage of time may result in changes in the soil and groundwater conditions at these locations.

ATTACHMENT C.1

Logs of Borings by U.S. Army Corps of Engineers (1987)

2F-9

Depth		N	GR	SA	FI	LL	PI	MC	
El. 202.6 = 0	CL	20							*SANDY CLAY, dark brown, damp, est. 75% medium plasticity fines, est. 25% fine grained sand, very stiff to stiff
	CL	11							As Above
5.0'	CL	12	-	17	83	32	11	20	SANDY CLAY, brown, very fine grained sand, stiff
	CL	12							As above
10.0' 10.5'	ML	5	-	41	59	-	-	-	SANDY SILT, brown to mottled gray brown, moist to wet, non-plastic fines, very fine to fine grained subangular sand, firm
12.0'	CL	7							*SANDY CLAY, dark brown, est. 80% medium plasticity fines, est. 20% fine grained sand, firm to stiff, minor decayed organic matter at 16.0'
15.0'	CL	10	-	-	-	-	-	28	As above
	CL	9							*SANDY CLAY, brown, moist, est. 45-55% fine grained subangular sand, est. 45-55% non- to low plasticity fines, stiff, sand increases with depth
20.0'									

NFWE

29 AUG 83

2F-10

Depth		N	GR	SA	FI	LL	PI	MC	
El. 205.0 = 0	CL	9	2	28	70	29	9	17	SANDY CLAY, brown, very fine to fine grained sand, gravel to 3/4" diameter, stiff
	(CL)	8							SANDY CLAY, dark brown, moist, est. 80% low plasticity fines, est. 20% fine grained subangular sand, firm to stiff, decayed organic material at 6.0'
5.0'	(CL)	10							As above
	CL	14							*SANDY CLAY, dark brown, moist, est. 80% medium plasticity fines, est. 20% fine grained sand, stiff, decayed organic material observed in field at 8.5'
10.0'	CL	13							As above
	CL	9	-	24	76	32	11	-	SANDY CLAY, brown, moist to wet, very fine to fine grained sand, stiff
15.0'	CL	7	-	-	-	-	-	29	*SANDY CLAY, dark brown, est. 85% medium plasticity fines, est. 15% fine grained sand, firm
	CL	11	-	32	68	35	15	-	SANDY CLAY, mottled gray-brown with iron oxide staining, moist to wet, very fine grained sand, stiff
20.0'									

NFWE

29 AUG 83

7F-1

Depth		N**	GR	SA	FI	LL	PI	MC	γ_d	
El. 207.0 = 0	CL	18	11	22	67	31	9	-	-	SANDY SILTY CLAY, dark brown, dry, fine to coarse sand, gravel to 3/4" diameter, very stiff
	CL	18								As above
5.0'	CL	17								As above
8.0'	SC-SM	21								*SILTY CLAYEY SAND, dark yellow brown, damp, est. 60% fine grained sand, est. 40% low to medium plasticity fines, very firm
9.5' 10.0'	SM	20	-	61	39	20	3	9	-	SILTY SAND, brown, very fine to medium grained sand, firm
13.5'	ML	24						10	94	*SANDY SILT, brown, damp, est. 60-70% non- to low plasticity fines, est. 30-40% fine grained sand, very stiff, unconfined compressive strength $Q_u = 0.48$ tsf
14.5' 15.0'	SC-SM	7	-	61	39	24	4	14	90	CLAYEY-SILTY SAND, brown, very fine grained sand, $G_s = 2.72$, loose to firm, consolidated-undrained (R) strength: Ø = 29°
	SC-SM	19	-	55	45	-	-	15	109	As above
20.0'	(SP-SM)	21								SILTY GRAVELLY SAND, brown, wet, est. 70-80% subangular medium to coarse grained sand, est. 20% subrounded gravel to 1-1/2" diameter, est. 0-10% non-plastic fines
23.0' ▽ (11 a.m) 23.5'	SC									*CLAYEY SAND, dark yellow-brown, wet, est. 60% graded sand, est. 40% medium plasticity fines
23.8'	GP-GC	27								*CLAYEY SANDY GRAVEL, dark yellow-brown, wet, est. 60-70% well graded angular to subangular gravel to 1-1/2" diameter, est. 25-35% graded sand, est. 5% medium plasticity fines, very firm
25.0'										

30 AUG 83

DH-4A

Depth		N*	GR	SA	FI	LL	PI	MC	γ_d	
El. 204.5 = 0										SILTY CLAY - CLAYEY SILT, dark brown, dry to damp, firm, unconfined compressive strength $Q_u = 1.11$ tsf
5.0'	CL-ML	8	-	-	-	22	5	18	107	
	CL-ML									
10.0'	ML	7	-	-	-	-	NP	10	110	SANDY SILT, firm at 10.0', stiff at 15.0', firm at 19.0', unconfined compressive strength $Q_u = 1.74$ tsf
15.0'	ML	13	-	-	-	-	NP	15	110	As above, unconfined compressive strength $Q_u = 1.29$ tsf
	ML		2	22	76	-	NP	18	105	As above
20.0'	GP	9	-	-	-	-	NP	20	101	SILTY SANDY GRAVEL, brown, moist, gravel to 1.5" diameter, amount increasing with depth, loose to very firm, unconfined compressive strength $Q_u = 0.48$ tsf
	GP	23	52	40	8	-	-	6	118	As above
25.0'										

JULY 79

NOTE: For legend and additional notes, see sheet 14.

AS-CONSTRUCTED

MICHAEL BAKER, JR. INC.
RECEIVED
JAN 30 1990
ALEXANDRIA, VA.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: *P. Lee / K. Swanson*
DRAWN: *K. Wahl / J. Hoyes*
CHECKED: *D. J. Anderson*

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

LOGS OF BORINGS

FOUNDATION
2F-9, 2F-10, 7F-1 & DH-4A
PHASE I

SUBMITTED:
CHIEF, SOIL DESIGN SECTION
DATE APPROVED:
SCALE: NO SCALE
SPEC. No. 7495
SHEET 15
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
~~SANTA CLARA_CA0431~~

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

7 F - 2

Depth		N**	GR	SA	FI	LL	PI	MC	γd	
El. 213.5 = 0										*CLAYEY SAND, dark yellow-brown, damp, est. 50% well graded sand, est. 40% medium plasticity fines, est. 10% angular to subangular gravel to 1/2" diameter, firm
	SC	12								
3.5'	SC	21	33	34	33	26	8	10	-	CLAYEY GRAVELLY SAND, brown, fine to coarse grained sand, angular gravel to 1-1/2" diameter, very firm
5.0'										SILTY SANDY GRAVEL, brown, dry, est. 45-55% angular gravel, est. 35% medium to coarse grained sand, est. 10-20% fines
	(GP)	35	-	-	-	-	-	10	120	
8.0'										*GRAVELLY CLAYEY SAND, dark brown with mottled red and yellow-brown, moist, est. 55% well graded sand, est. 35% medium plasticity fines, est. 10% hard to soft subangular gravel to 3/4" diameter, very firm at 9.0', dense at 11.0'
	SC	23								
10.0'										
	SC GC	32						15		
11.7'										*CLAYEY SANDY GRAVEL, est. 55% gravel, est. 30% graded sand, est. 15% medium plasticity fines, very firm
	GC	29								
15.0'										SANDY CLAY, brown, damp, fine to coarse grained sand, angular gravel to 3/8" diameter, G_s = 2.79, swell at 1.25 tsf load = 0.05% (negligible)
	CL	51								
	CL	42	5	44	51	36	15	16	112	
20.0'										
21.0'	GC	R								*CLAYEY SANDY GRAVEL, brown, damp, est. 50% hard to soft gravel to 1" diameter, est. 30% well graded sand, est. 20% medium plasticity fines, very dense
21.5'	CL							13 14	113	*GRAVELLY SANDY CLAY, moist, est. 65-75% medium plasticity fines, est. 15-20% medium grained sand, est. 10-15% fine gravel, clayey sand pockets
23.5'	SC	49	14	44	42	40	20	16	115	CLAYEY SAND, brown, fine to coarse grained sand, gravel to 1/2" diameter, dense
25.0'										

NFWE

30 AUG 83

D H - 5 A

Depth		N*	GR	SA	FI	LL	PI	MC	γd	
El. 214.7 = 0	(CL-ML)									SILTY CLAY - CLAYEY SILT, brown, dry, fine gravel, hard
5.0'	ML	53	7	43	50	-	-	11	123	SANDY SILT, hard, unconfined compressive strength (Q_u) = 10.0 tsf
	ML									
10.0'	SC	R	30	51	19	-	-	12	116	CLAYEY GRAVELLY SAND, very dense
15.0'	SC	24	13	63	24	-	-	15	119	GRAVELLY CLAYEY SAND, firm, unconfined compressive strength (Q_u) = 4.9 tsf
19.0'										SANDY CLAY, brown, dry to damp, fine to medium grained sand, hard, unconfined compressive strength (Q_u) = 9.5 tsf
20.0'	CL	R	0	41	59	-	-	15	117	
24.0'	SC	33	11	42	47	-	-	15	116	GRAVELLY CLAYEY SAND, brown, moist, very firm, unconfined compressive strength (Q_u) = 5.9 tsf
25.0'										

NFWE

JULY 79

2 F - 1 1

Depth		N	GR	SA	FI	LL	PI	MC	
El. 207.1 = 0									SANDY CLAY, dark brown, moist, very fine grained sand, very stiff at 1.0' depth, firm at 3.5'
	CL	17							
	CL	7	-	13	87	37	13	-	
5.0'									*SANDY CLAY, dark brown, est. 75% medium plasticity fines, est. 25% fine grained sand, stiff
	CL	13	-	-	-	-	-	20	
	CL	14							At 8.5' depth, some decayed organic material
10.0'									
	CL	14							
13.0'	CL	13	-	30	70	30	10	-	SANDY CLAY, mottled gray brown with some iron oxide staining, moist to wet, very fine grained sand, stiff
15.0'									
15.5'	CL	11	-	-	-	-	-	22	*SANDY CLAY, dark brown, est. 55% medium plasticity fines, est. 45% fine grained sand, stiff
18.0'	CL	9	2	32	66	33	13	-	SANDY CLAY, mottled gray-brown, wet, very fine to medium grained sand, gravel to 1" diameter, stiff
20.0'									

NFWE

29 AUG 83

7 F - 3 (O.W.)

Depth		N**	GR	SA	FI	LL	PI	MC	γd	
El. 200.0 = 0										SILTY GRAVELLY SAND, brown, fine to coarse grained sand, gravel to 1-1/2" diameter, non-plastic fines, firm
	SP-SM	16								
	SP-SM	14	33	55	12	-	-	13	108	
4.5'										
5.0'										At 5.0' depth, pieces of broken glass SANDY GRAVEL, dry, est. 80-90% subrounded to rounded gravel to 3" diameter, est. 10-20% medium to coarse grained sand
10.0'	(GP-GM)									
15.0'										
18.0'										GRAVELLY SANDY CLAY, reddish brown, damp, est. 70% medium plasticity fines, est. 20% rounded gravel, est. 10% medium to coarse grained sand, hard, consolidated undrained (R) strength: Φ = 10°, C = 1.0 tsf, effective strength Φ = 37°
20.0'	(CL)	35	-	-	-	-	-	17	111	
22.5'	GC	42	-	-	-	-	-	18	108	*CLAYEY SANDY GRAVEL, reddish brown, moist, est. 35-45% subangular gravel to 3/4" diameter, est. 30-40% sand, est. 20-30% medium plasticity fines, dense, unconfined compressive strength (Q_u) = 1.31 tsf
25.0'										

NFWE

30 AUG 83

NOTE: For legend and additional notes, see sheet 14.

AS-CONSTRUCTED

MICHAEL BAKER, JR. INC.
RECEIVED
JAN 30 1990
ALEXANDRIA, VA.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: P. Lee
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

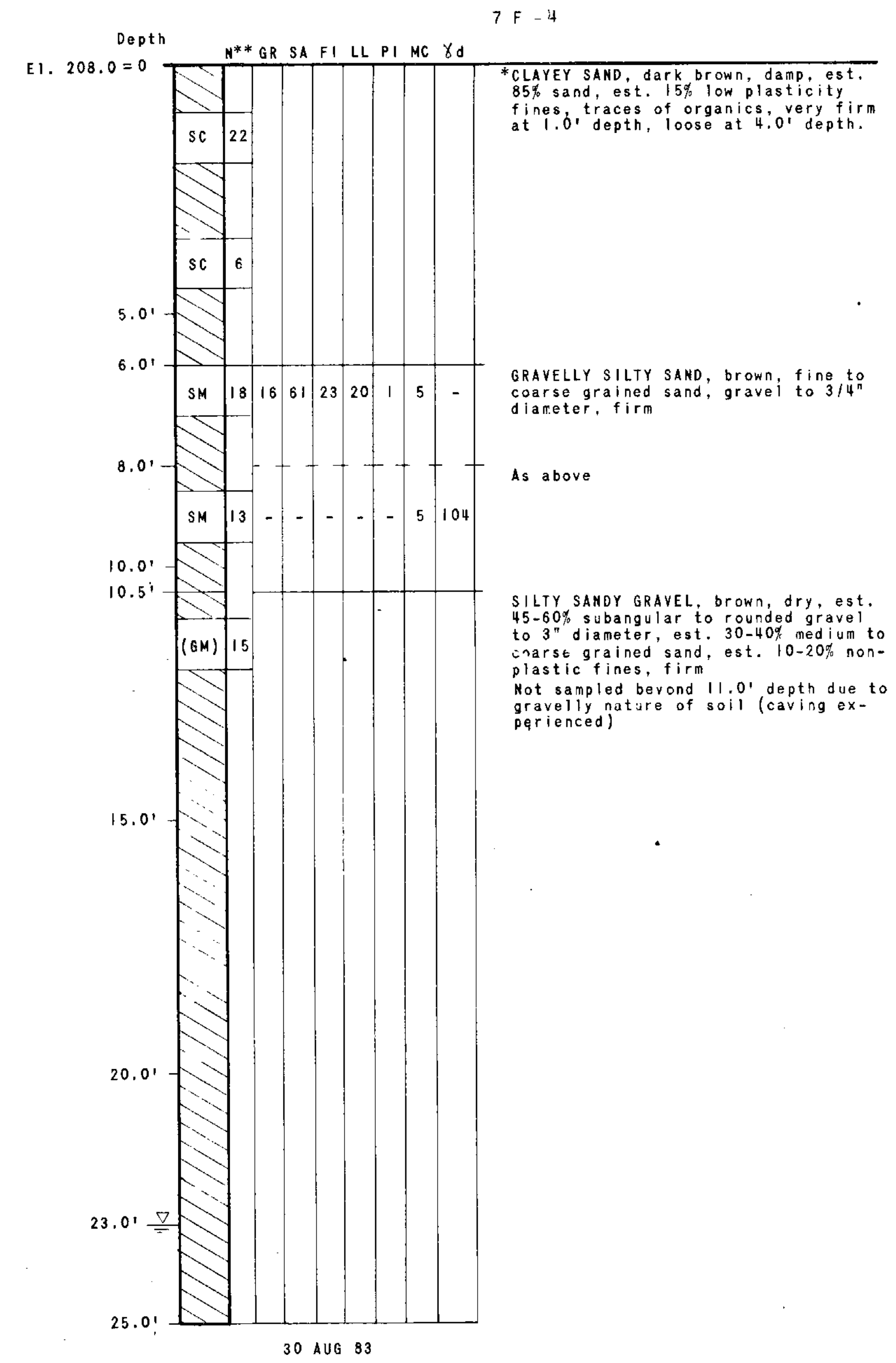
LOGS OF BORINGS

FOUNDATION
7F-2, DH-5A, 2F-11 & 7F-3
PHASE I

SUBMITTED:
CHIEF, SOIL DESIGN SECTION
DATE APPROVED:

SCALE: NO SCALE
SPEC. No 7495
SHEET 16
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0432



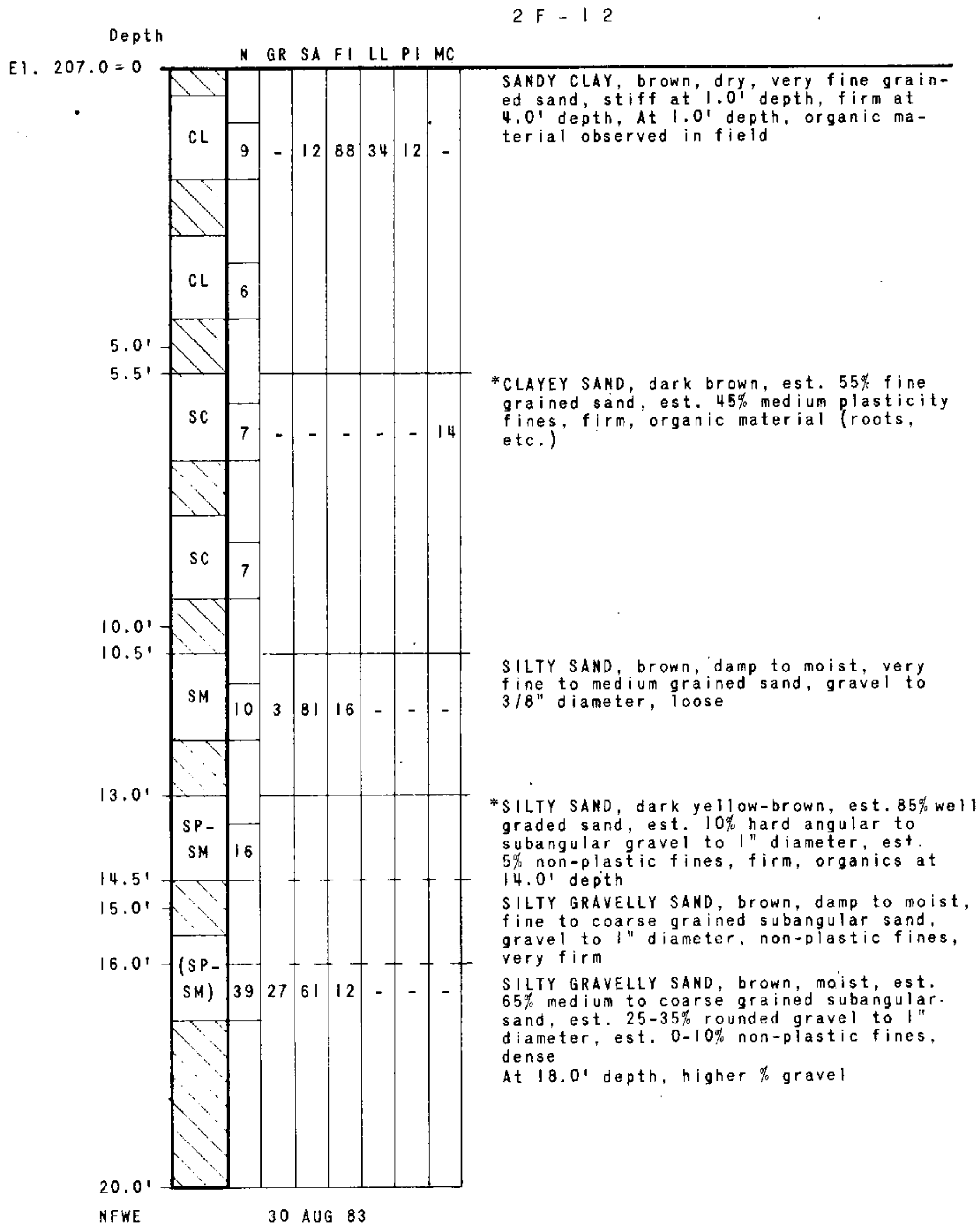
*CLAYEY SAND, dark brown, damp, est. 85% sand, est. 15% low plasticity fines, traces of organics, very firm at 1.0' depth, loose at 4.0' depth.

GRAVELLY SILTY SAND, brown, fine to coarse grained sand, gravel to 3/4" diameter, firm

As above

SILTY SANDY GRAVEL, brown, dry, est. 45-60% subangular to rounded gravel to 3" diameter, est. 30-40% medium to coarse grained sand, est. 10-20% non-plastic fines, firm

Not sampled beyond 11.0' depth due to gravelly nature of soil (caving experienced)



SANDY CLAY, brown, dry, very fine grained sand, stiff at 1.0' depth, firm at 4.0' depth, At 1.0' depth, organic material observed in field

*CLAYEY SAND, dark brown, est. 55% fine grained sand, est. 45% medium plasticity fines, firm, organic material (roots, etc.)

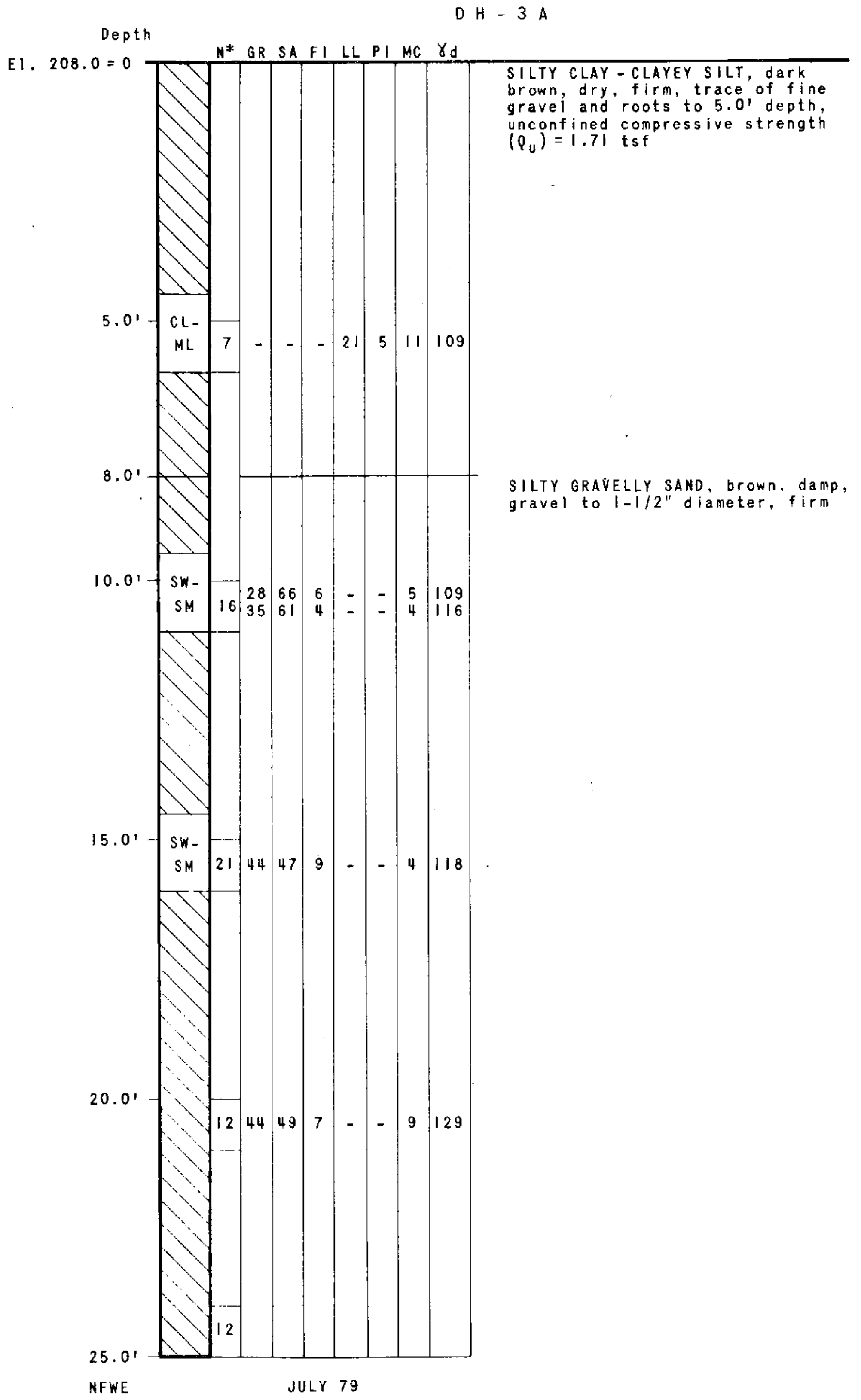
SILTY SAND, brown, damp to moist, very fine to medium grained sand, gravel to 3/8" diameter, loose

*SILTY SAND, dark yellow-brown, est. 85% well graded sand, est. 10% hard angular to subangular gravel to 1" diameter, est. 5% non-plastic fines, firm, organics at 14.0' depth

SILTY GRAVELLY SAND, brown, damp to moist, fine to coarse grained subangular sand, gravel to 1" diameter, non-plastic fines, very firm

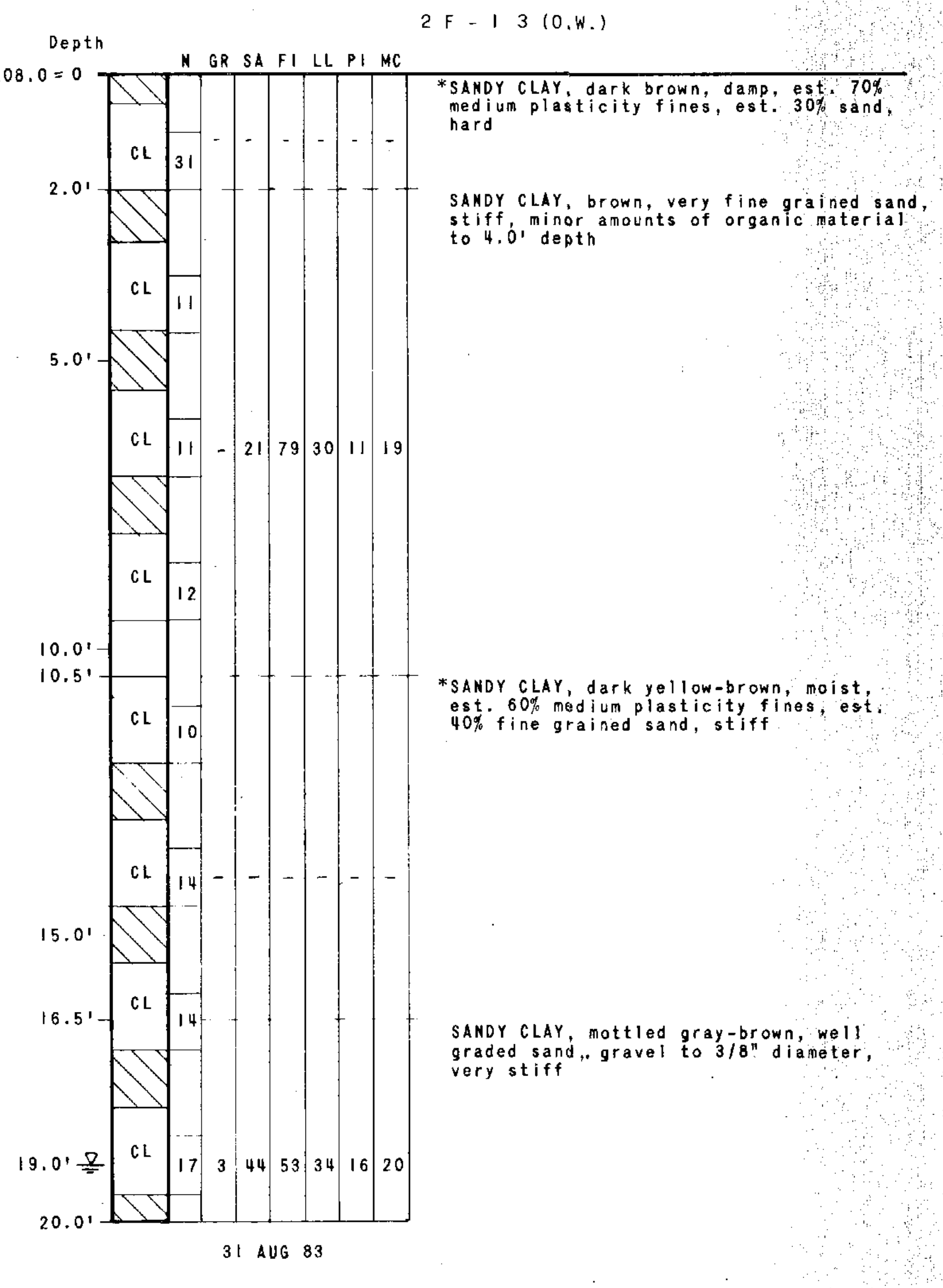
SILTY GRAVELLY SAND, brown, moist, est. 65% medium to coarse grained subangular sand, est. 25-35% rounded gravel to 1" diameter, est. 0-10% non-plastic fines, dense

At 18.0' depth, higher % gravel



SILTY CLAY - CLAYEY SILT, dark brown, dry, firm, trace of fine gravel and roots to 5.0' depth, unconfined compressive strength $(Q_u) = 1.71$ tsf

SILTY GRAVELLY SAND, brown, damp, gravel to 1-1/2" diameter, firm



*SANDY CLAY, dark brown, damp, est. 70% medium plasticity fines, est. 30% sand, hard

SANDY CLAY, brown, very fine grained sand, stiff, minor amounts of organic material to 4.0' depth

*SANDY CLAY, dark yellow-brown, moist, est. 60% medium plasticity fines, est. 40% fine grained sand, stiff

SANDY CLAY, mottled gray-brown, well graded sand, gravel to 3/8" diameter, very stiff

NOTE: For legend and additional notes, see sheet 14.

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING

AS-CONSTRUCTED

MICHAEL BAKER, JR. INC.
RECEIVED
JAN 30 1990
ALEXANDRIA, VA.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

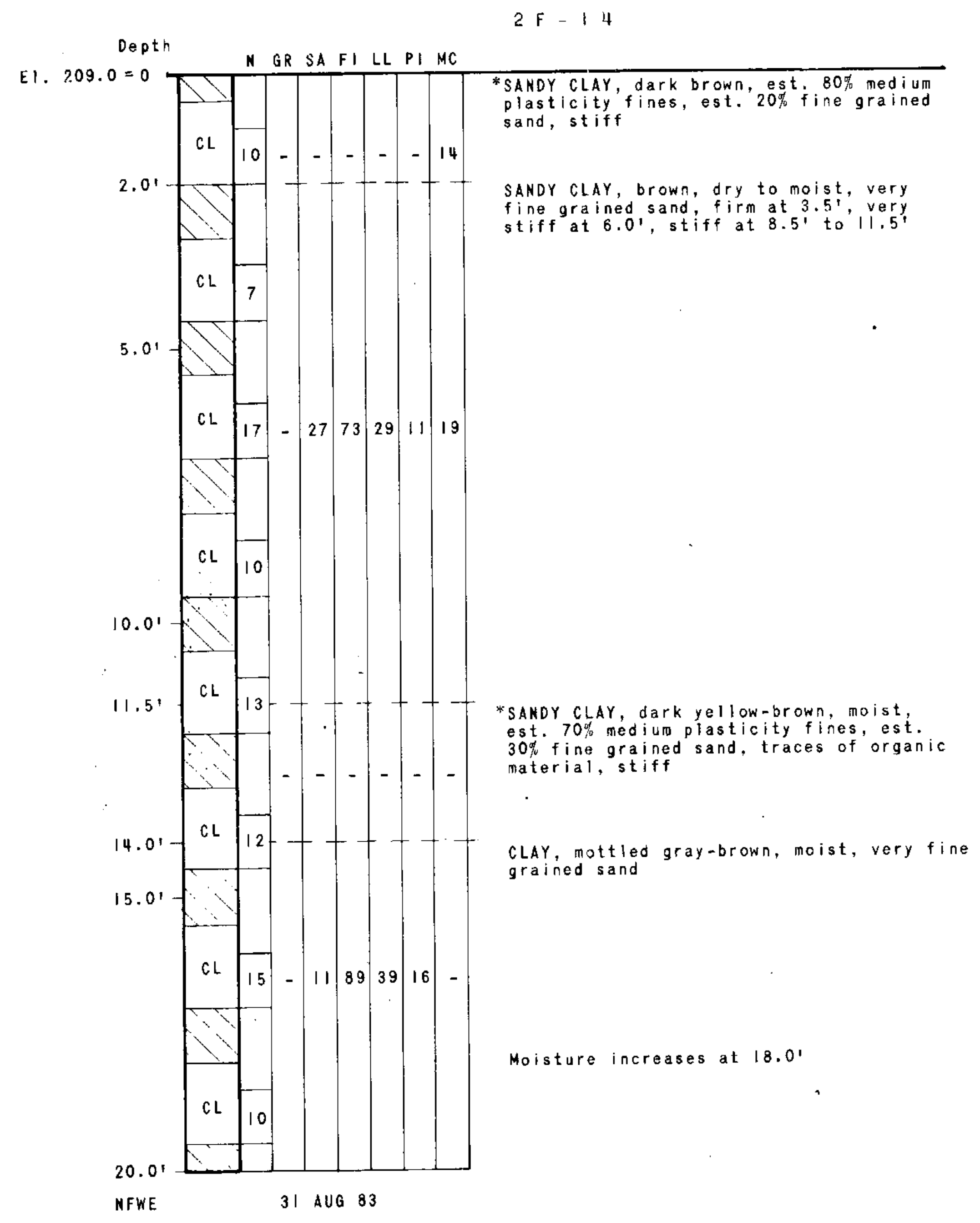
DESIGNED: K. Swanson
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

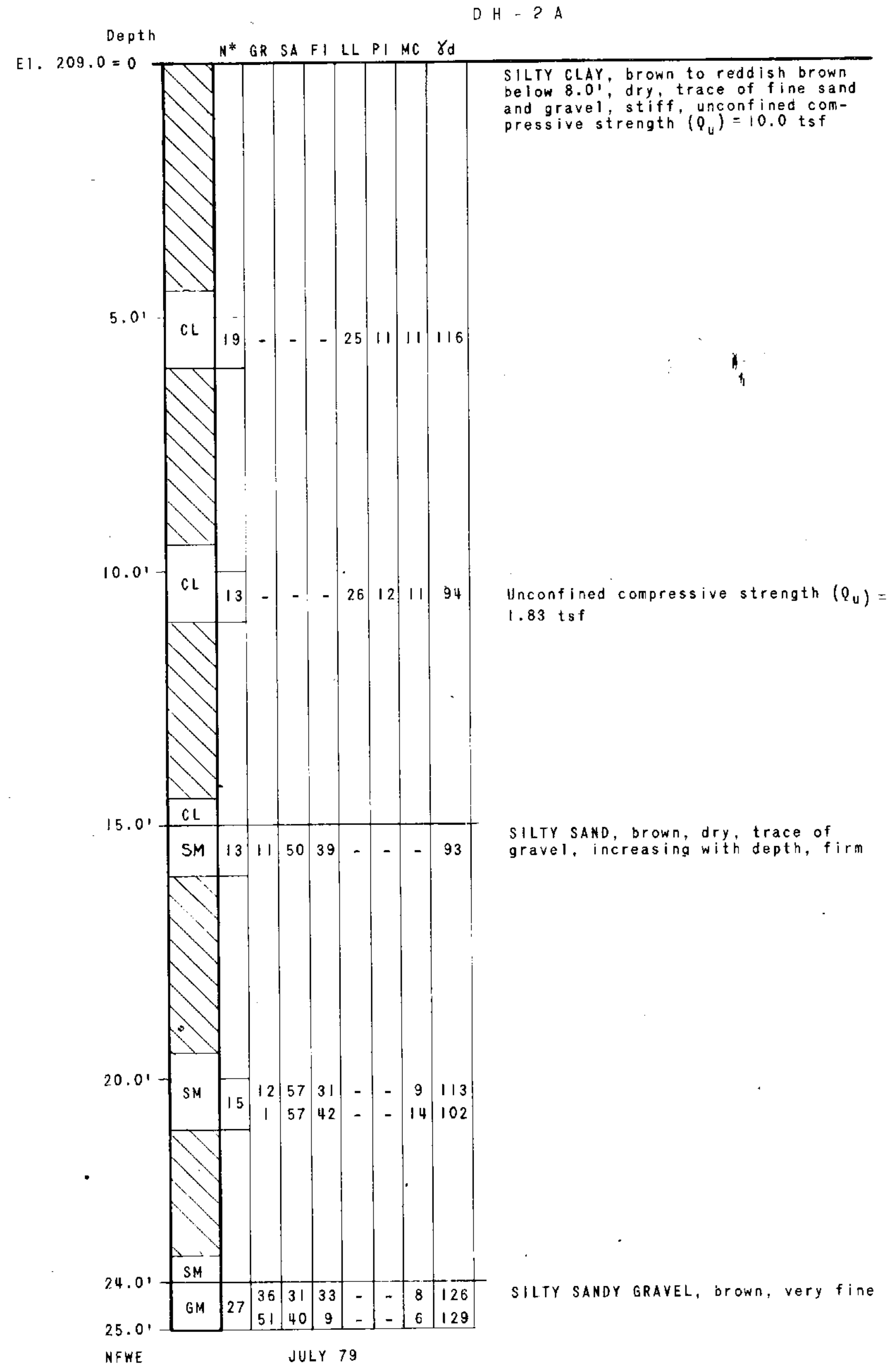
PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
LOGS OF BORINGS
FOUNDATION
7F-4, 2F-12, DH-3A & 2F-13
PHASE I

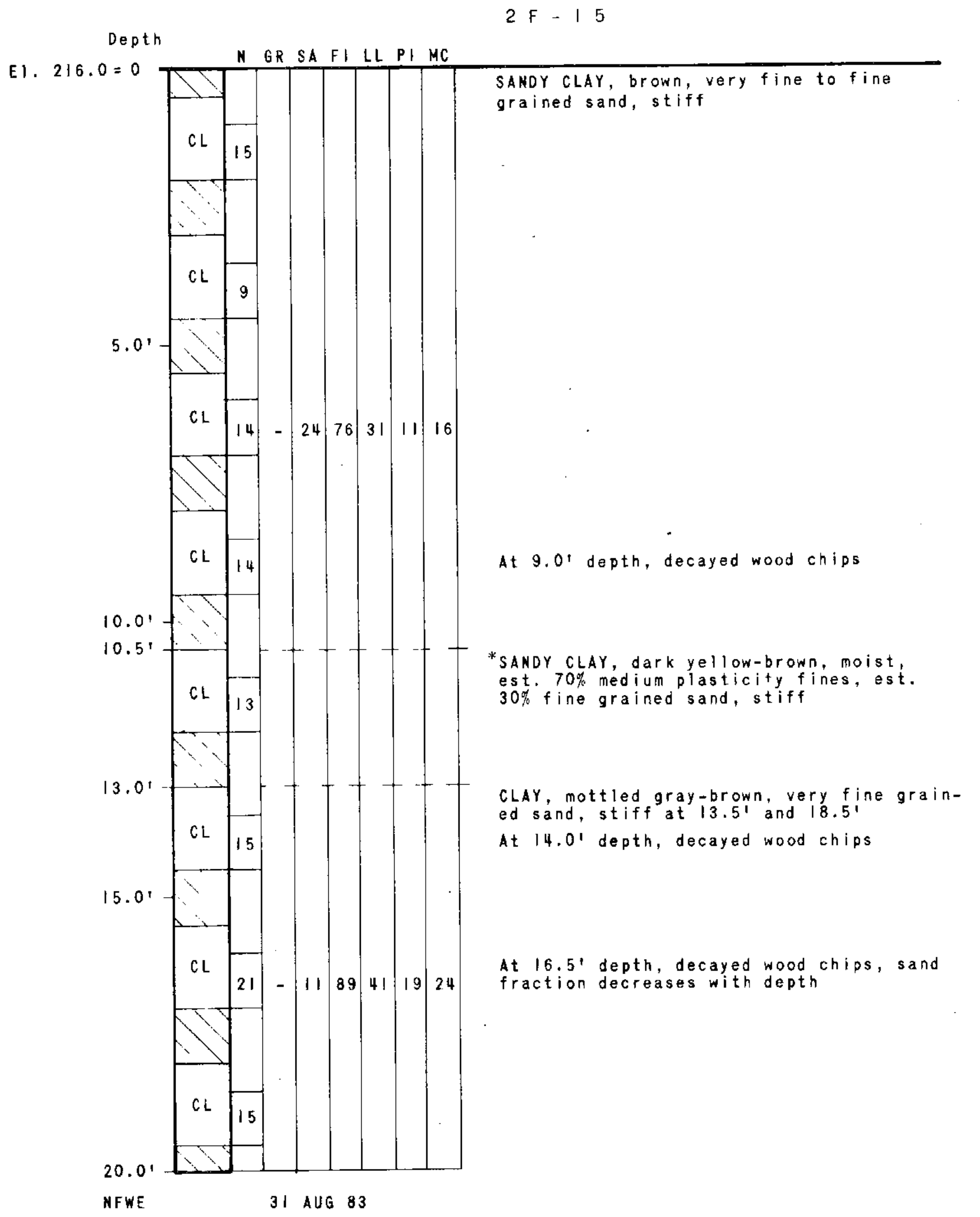
SUBMITTED:
CHIEF, SOIL DESIGN SECTION
DATE APPROVED: 1987
SCALE: NO SCALE
SPEC. No. 7495
SHEET 17
FILE No. PA-18-4-05

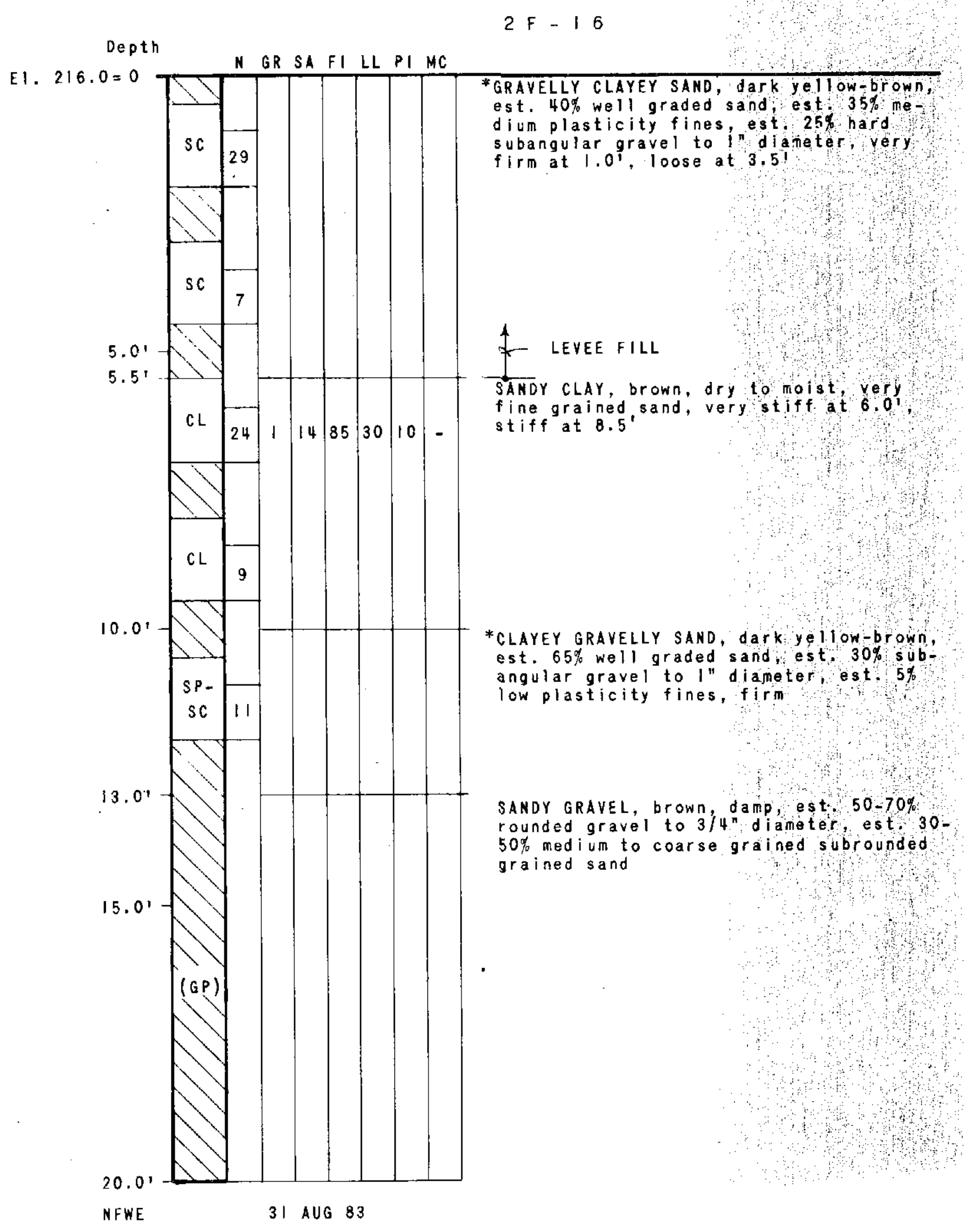
SANTA CLARA_CA Work Maps
SANTA CLARA_CA0433

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


2F-14
Depth
El. 209.0 = 0
2.0'
5.0'
10.0'
11.5'
14.0'
15.0'
20.0'
NFWE
N GR SA FI LL PI MC
CL 10 - - - - - 14
CL 7
CL 17 - 27 73 29 11 19
CL 10
CL 13
- - - - - -
CL 12
CL 15 - 11 89 39 16 -
CL 10
31 AUG 83
*SANDY CLAY, dark brown, est. 80% medium plasticity fines, est. 20% fine grained sand, stiff
SANDY CLAY, brown, dry to moist, very fine grained sand, firm at 3.5', very stiff at 6.0', stiff at 8.5' to 11.5'
*SANDY CLAY, dark yellow-brown, moist, est. 70% medium plasticity fines, est. 30% fine grained sand, traces of organic material, stiff
CLAY, mottled gray-brown, moist, very fine grained sand
Moisture increases at 18.0'


DH-2A
Depth
El. 209.0 = 0
5.0'
10.0'
15.0'
20.0'
24.0'
25.0'
NFWE
N* GR SA FI LL PI MC γd
CL 19 - - - 25 11 11 116
CL 13 - - - 26 12 11 94
CL
SM 13 11 50 39 - - - 93
SM 15 12 57 31 - - 9 113
1 57 42 - - 14 102
SM
GM 27 36 31 33 - - 8 126
51 40 9 - - 6 129
JULY 79
SILTY CLAY, brown to reddish brown below 8.0', dry, trace of fine sand and gravel, stiff, unconfined compressive strength (Q_u) = 10.0 tsf
Unconfined compressive strength (Q_u) = 1.83 tsf
SILTY SAND, brown, dry, trace of gravel, increasing with depth, firm
SILTY SANDY GRAVEL, brown, very fine


2F-15
Depth
El. 216.0 = 0
5.0'
10.0'
10.5'
13.0'
15.0'
20.0'
NFWE
N GR SA FI LL PI MC
CL 15
CL 9
CL 14 - 24 76 31 11 16
CL 14
CL 13
CL 15
CL 21 - 11 89 41 19 24
CL 15
31 AUG 83
SANDY CLAY, brown, very fine to fine grained sand, stiff
At 9.0' depth, decayed wood chips
*SANDY CLAY, dark yellow-brown, moist, est. 70% medium plasticity fines, est. 30% fine grained sand, stiff
CLAY, mottled gray-brown, very fine grained sand, stiff at 13.5' and 18.5'
At 14.0' depth, decayed wood chips
At 16.5' depth, decayed wood chips, sand fraction decreases with depth


2F-16
Depth
El. 216.0 = 0
5.0'
5.5'
10.0'
13.0'
15.0'
20.0'
NFWE
N GR SA FI LL PI MC
SC 29
SC 7
CL 24 1 14 85 30 10 -
CL 9
SP-SC 11
(GP)
31 AUG 83
*GRAVELLY CLAYEY SAND, dark yellow-brown, est. 40% well graded sand, est. 35% medium plasticity fines, est. 25% hard subangular gravel to 1" diameter, very firm at 1.0', loose at 3.5'
LEVEE FILL
SANDY CLAY, brown, dry to moist, very fine grained sand, very stiff at 6.0', stiff at 8.5'
*CLAYEY GRAVELLY SAND, dark yellow-brown, est. 65% well graded sand, est. 30% subangular gravel to 1" diameter, est. 5% low plasticity fines, firm
SANDY GRAVEL, brown, damp, est. 50-70% rounded gravel to 3/4" diameter, est. 30-50% medium to coarse grained subrounded grained sand

NOTE: For legend and additional notes, see sheet 14.

AS-CONSTRUCTED

MICHAEL BAKER, JR. INC.
RECEIVED
JAN 30 1990
ALEXANDRIA, VA.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: *P. Lee*
DRAWN: *K. Wahl / J. Hayes*
CHECKED: *D. J. Anderson*

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

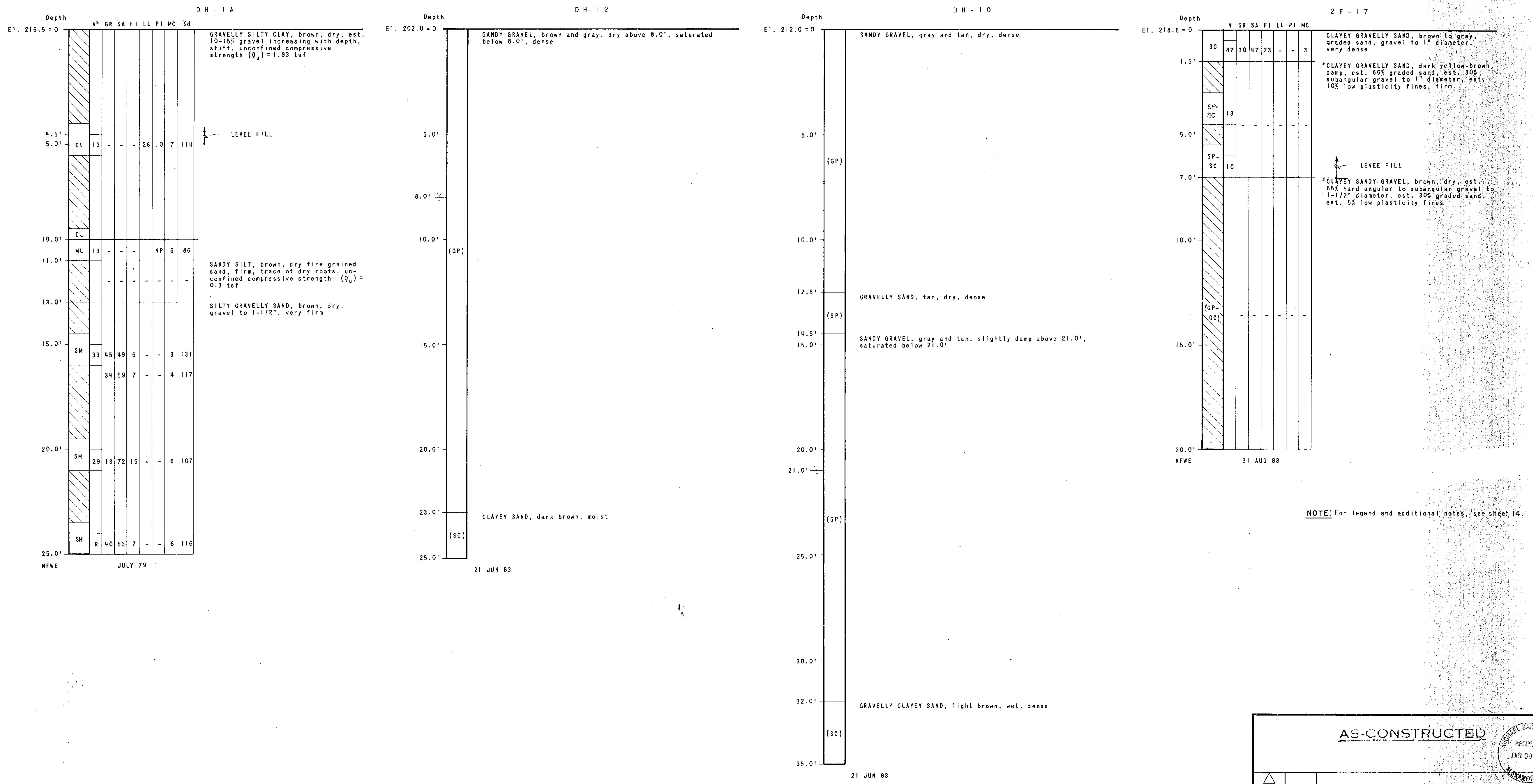
LOGS OF BORINGS

FOUNDATION
2F-14, DH-2A, 2F-15 & 2F-16
PHASE I

SUBMITTED:
CHIEF, SOIL DESIGN SECTION
DATE APPROVED:
SCALE: NO SCALE
SPEC. No. 7495
SHEET 18
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0434

ENVIRONMENTAL ENHANCEMENT THRU ENGINEERING


DH-1A
Depth
El. 216.5 = 0
N* GR SA FI LL PI MC γd
GRAVELLY SILTY CLAY, brown, dry, est. 10-15% gravel increasing with depth, stiff, unconfined compressive strength (Qu) = 1.83 tsf
4.5'
5.0'
CL 13 - - - 26 10 7 114
LEVEE FILL
CL
10.0'
ML 13 - - - NP 6 86
11.0'
- - - - - - -
SANDY SILT, brown, dry fine grained sand, firm, trace of dry roots, unconfined compressive strength (Qu) = 0.3 tsf
13.0'
SILTY GRAVELLY SAND, brown, dry, gravel to 1-1/2", very firm
15.0'
SM 33 45 49 6 - - 3 131
34 59 7 - - 4 117
20.0'
SM 29 13 72 15 - - 6 107
SM R 40 53 7 - - 6 116
25.0'
NFWE
JULY 79
DH-12
Depth
El. 202.0 = 0
SANDY GRAVEL, brown and gray, dry above 8.0', saturated below 8.0', dense
5.0'
8.0'
10.0'
(GP)
15.0'
20.0'
23.0'
CLAYEY SAND, dark brown, moist
(SC)
25.0'
21 JUN 83
DH-10
Depth
El. 212.0 = 0
SANDY GRAVEL, gray and tan, dry, dense
5.0'
(GP)
10.0'
12.5'
GRAVELLY SAND, tan, dry, dense
(SP)
14.5'
15.0'
SANDY GRAVEL, gray and tan, slightly damp above 21.0', saturated below 21.0'
20.0'
21.0'
(GP)
25.0'
30.0'
32.0'
GRAVELLY CLAYEY SAND, light brown, wet, dense
(SC)
35.0'
21 JUN 83
2F-17
Depth
El. 218.6 = 0
N GR SA FI LL PI MC
SC 87 30 47 23 - - 3
CLAYEY GRAVELLY SAND, brown to gray, graded sand, gravel to 1" diameter, very dense
1.5'
*CLAYEY GRAVELLY SAND, dark yellow-brown, damp, est. 60% graded sand, est. 30% subangular gravel to 1" diameter, est. 10% low plasticity fines, firm
SP-SC 13
- - - - - -
5.0'
SP-SC 10
LEVEE FILL
7.0'
*CLAYEY SANDY GRAVEL, brown, dry, est. 65% hard angular to subangular gravel to 1-1/2" diameter, est. 30% graded sand, est. 5% low plasticity fines
10.0'
(GP-GC)
- - - - - -
15.0'
20.0'
NFWE
31 AUG 83

NOTE: For legend and additional notes, see sheet 14.

AS-CONSTRUCTED

MICHAEL BAKER, JR. INC.
RECEIVED
JAN 30 1990
ALEXANDRIA, VA.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: P. Lee
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION

LOGS OF BORINGS

FOUNDATION
DH-1A, DH-12, DH-10 & 2F-17
PHASE I

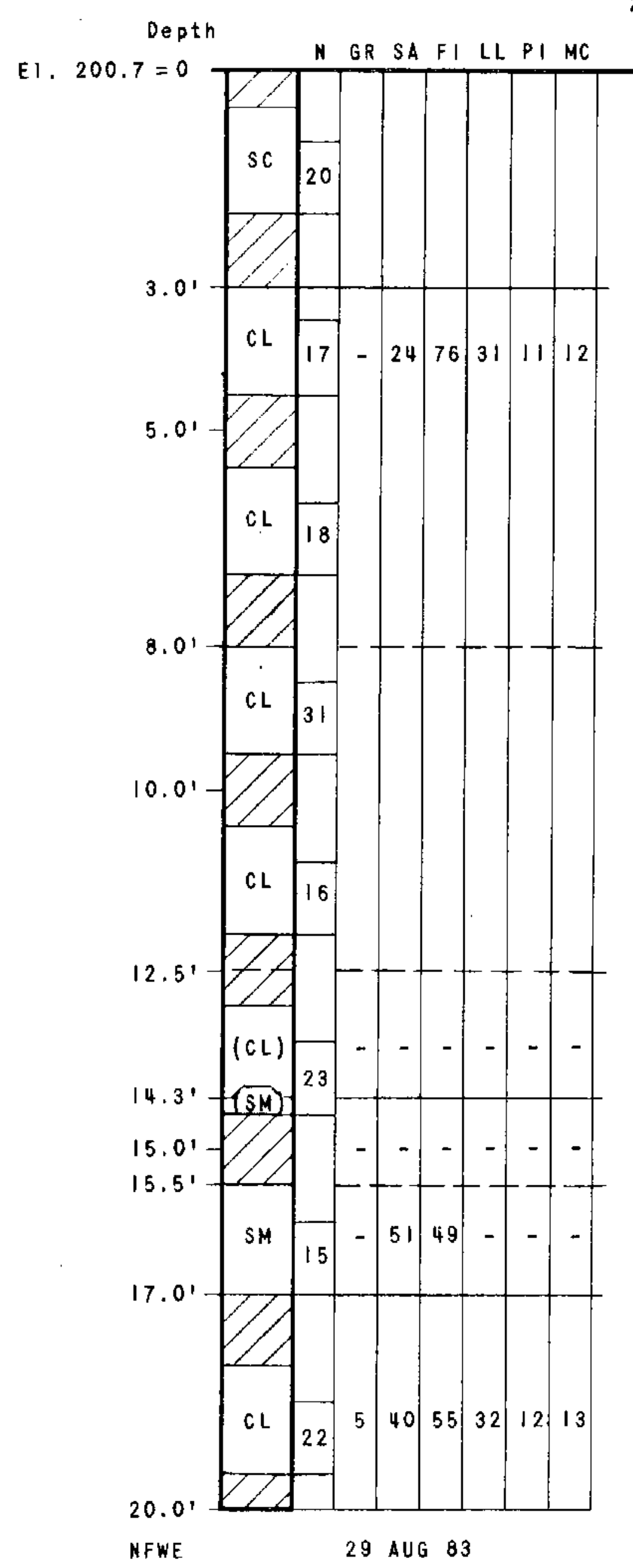
SUBMITTED: Darrell L. Anderson
CHIEF, SOIL DESIGN SECTION
DATE APPROVED:
SCALE: NO SCALE
SPEC. No. 7495
SHEET 19
FILE No. PA-18-4-05

SANTA CLARA_CA Work Maps
SANTA CLARA_CA0435

ATTACHMENT C.2

Logs of Borings by Ruth and Going, Inc. (1988)

2 F - 7 (O.W.)



*CLAYEY SAND, dark yellow-brown, damp, est. 60% fine grained sand, est. 40% medium plasticity fines, traces of hard angular to subangular gravel to 3/8" maximum, very stiff

SANDY CLAY, brown, very fine grained sand, stiff

At 6.5' depth, organic material (roots, etc.), very stiff

*SANDY CLAY, dark yellow-brown, very damp, est. 65% medium plasticity fines, est. 35% fine grained sand, very stiff at 9.0', stiff at 11.0'
At 9.5' depth, some organic material (roots, etc.)

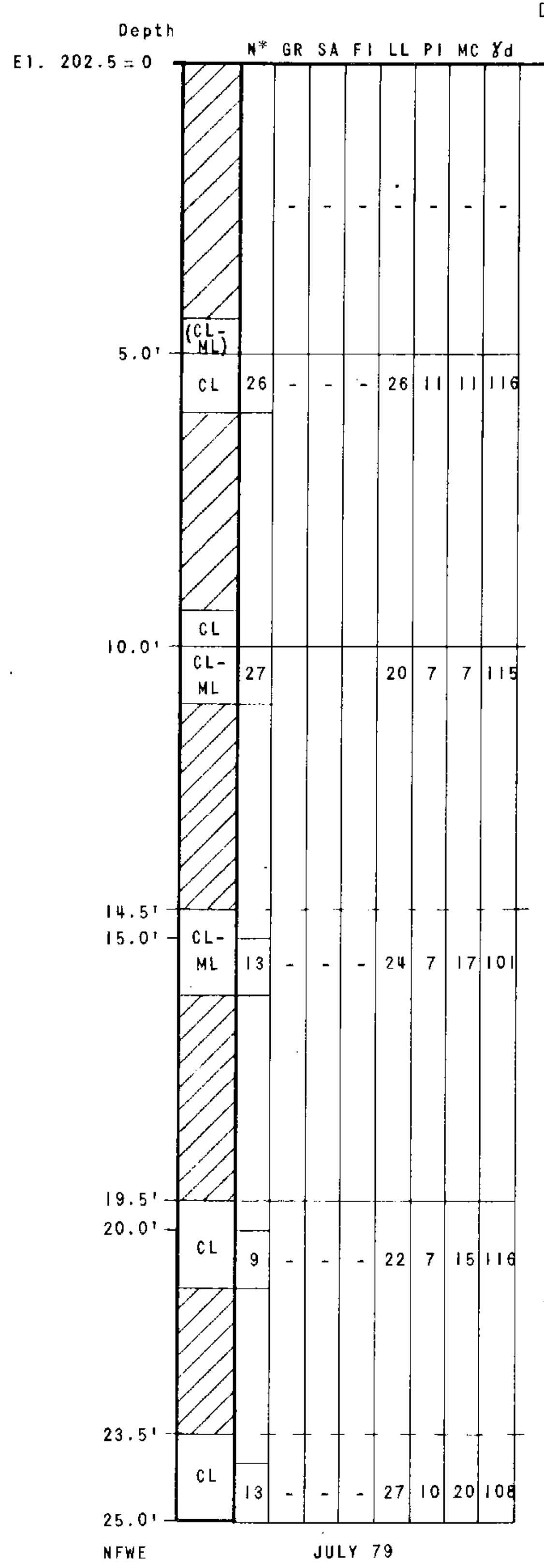
SANDY CLAY, brown, moist, est. 70% low plasticity fines, est. 30% subangular fine grained sand, some organic material (black), very stiff

GRAVELLY SILTY SAND, brown, moist, est. 60% subangular medium to coarse grained sand, est. 20% non-plastic fines, est. 20% subangular gravel

SILTY SAND, brown, damp, very fine to medium grained subangular sand, non-plastic fines, stiff

SANDY CLAY, mottled gray brown, graded subangular sand, gravel to 1" maximum, very stiff

D H - 6 A



SILTY CLAY - CLAYEY SILT, brown, dry, very stiff

SILTY CLAY, brown, unconfined compressive strength (Q_u) = 10.0 tsf, very stiff

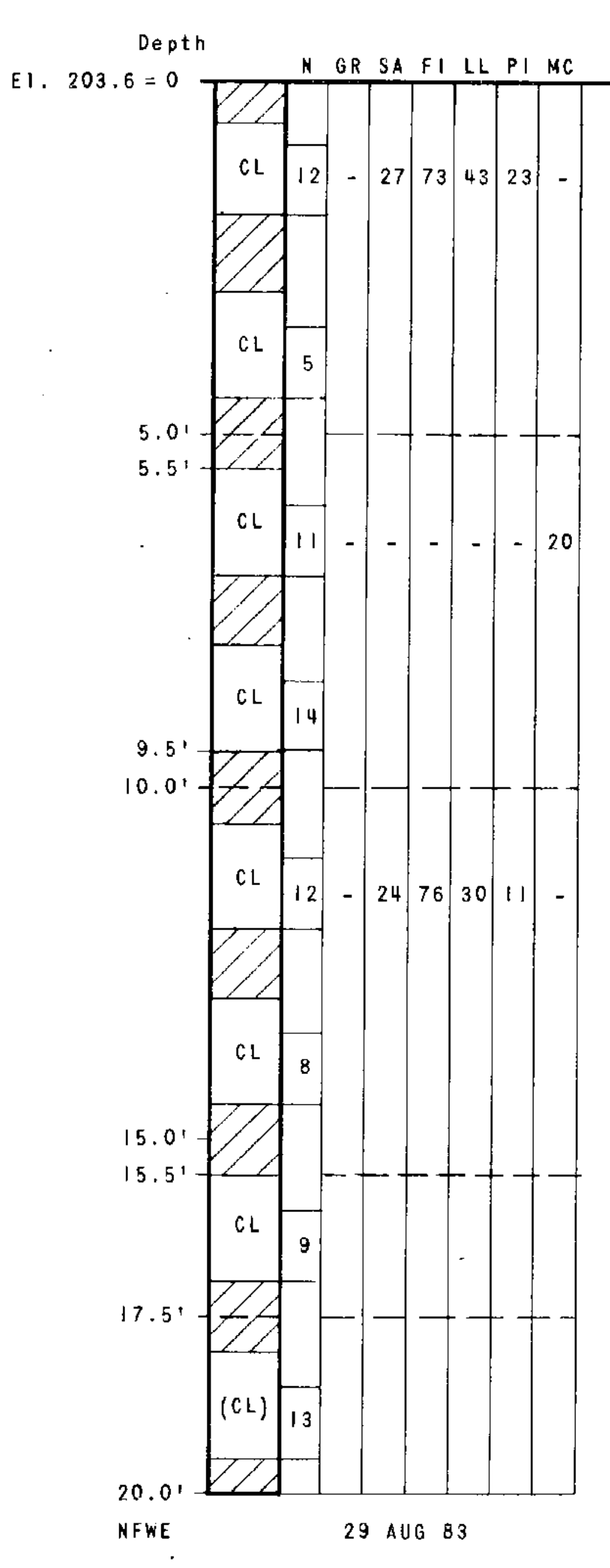
SILTY CLAY - CLAYEY SILT, brown, very stiff

As above, damp, unconfined compressive strength (Q_u) = 1.19 tsf, stiff

SANDY CLAY, brown, unconfined compressive strength (Q_u) = 0.66 tsf, stiff

As above, unconfined compressive strength (Q_u) = 0.55 tsf, stiff

2 F - 8



SANDY CLAY, brown, damp, very fine grained sand, stiff

At 3.5' depth, soft

*SANDY CLAY, dark brown, est. 75% medium plasticity fines, est. 25% fine grained sand, stiff

At 8.5' depth, minor amounts of decayed organic material, stiff

SANDY CLAY, brown, moist to wet, very fine grained sand, stiff

At 13.0'-14.0', some decayed organic material
At 13.5' depth, firm
Soil is wet below 14.0'

*SANDY CLAY, dark brown, est. 65% medium plasticity fines, est. 35% fine grained sand, stiff

SANDY CLAY, mottled gray brown, very fine grained sand, stiff

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS 50% or more retained on the No. 200 sieve.	GRAVELS More than half of coarse fraction retained on the No. 4 sieve.	Clean Gravels	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with fines	GM	Silty gravels, gravel-sand mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS More than half of coarse fraction passing the No. 4 sieve.	Clean sands	SW	Well-graded sands, gravelly sands, little or no fines.
			SP	Poorly-graded sands, gravelly sands, little or no fines.
		Sands with fines	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS More than 50% passing the No. 200 sieve.	SILTS AND CLAYS	Liquid Limit below 50%	ML	Inorganic silts and very fine sands, rock flour, silty fine sands or silts. Plasticity below "A" line.
			CL	Inorganic clays, gravelly clays, sandy clays, lean clays. Plasticity above "A" line.
			OL	Organic silts and organic clays. Plasticity below "A" line.
		Liquid Limit 50% and above	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts. Plasticity below "A" line.
			CH	Inorganic fat clays. Plasticity above "A" line.
			OH	Organic clays or organic silts. Plasticity below "A" line.
Highly organic soils			Pt	Peat, organic content greater than 60%.

STANDARD PENETROMETER DESCRIPTIVE DATA

COHESIONLESS		COHESIVE	
Blows*	Relative Density	Blows*	Consistency
0-4	Very Loose	0-1	Very Soft
5-10	Loose	2-4	Soft
11-20	Firm	5-8	Firm
21-30	Very Firm	9-15	Stiff
31-50	Dense	16-30	Very Stiff
51+	Very Dense	31+	Hard

*Blows per 1.0 ft. of penetration of a 2-inch O.D. and 1⅜-inch I.D. sampler driven by a 140-lb. hammer, 30-inch freefall.

LEGEND:

G_s	Specific Gravity.
▽	Groundwater Level.
GR	Gravel, percent by weight passing 3-inch sieve and retained on the No. 4 sieve.
SA	Sands, percent by weight passing the No. 4 sieve and retained on the No. 200 sieve.
FI	Fines, percent by weight passing the No. 200 sieve.
LL	Liquid Limit.
PI	Plasticity Index (Liquid Limit Minus Plastic Limit).
MC	Field Moisture Content in Percent of Dry Weight.
( )	Visual Field Classification.
*	Laboratory Visual Classification.
N	Number of Blows of Standard Penetrometer.
N*	Number of Blows of Standard Penetrometer converted from California Modified Penetrometer Values.
N**	Number of Blows of Standard Penetrometer converted from 3" O.D. Sampler values.

NOTES:

1. Classifications are in accordance with the Unified Soils Classification System (ASTM D-2487).
2. All sieve sizes on the chart are U.S. Standard.
3. The terms "silt" and "clay" are used respectively to distinguish materials exhibiting lower plasticity from those with higher plasticity. The minus No. 200 sieve material is silt if the liquid limit and plasticity index plot below the "A" line on the plasticity chart (ASTM D-2487) and is clay if the liquid limit and plasticity index plot above the "A" line on the chart.
4. Borderline Classification: Soils possessing characteristics of two groups are designated by combinations of group symbols. For example GW-GC, a well-graded gravel-sand mixture with a clay binder.
5. DH-1A thru DH-6A were drilled with a CME-55 truck mounted drill rig using either continuous flight or hollow stem augers in July 1981. These explorations were performed by J.H. Kleinfelder and Associates for the Corps of Engineers, San Francisco District.
6. Borings 7F-1 thru 7F-4, 2F-7 thru 2F-17 were drilled with a Mobile B-24 drill rig equipped with a continuous flight auger by Anderson Geotechnical on 29 thru 31 August 1983.
7. DH-10 and DH-12 were drilled by Terratech, Inc., using a continuous flight auger, in June 1983. This exploration program was part of the Ground Water Recharge Evaluation, Uvas Creek Park Area, Gilroy, CA, conducted by the Gavilan Water Conservation District.
8. Groundwater level is shown if measured, otherwise no free water encountered (NFWE) during drilling is noted on the logs.

LEGEND (CONTINUED)

NFWE	No Free Water Encountered.
γd	Dry Unit Weight (PCF).
▨	Interval not sampled.
O.W.	Observation well installed.

NOTES (CONTINUED)

9. Refusal of the Standard Penetrometer is as one of the following:
   a. 25 blows for 1" or less advancement.
   b. 50 blows for 1" to 6" advancement.
10. Locations of explorations are shown on plan sheets.
11. Top of hole elevations are approximate and are based on National Geodetic Vertical Datum of 1929.

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

AS-CONSTRUCTED

MICHAEL BAKER, JR. INC.
RECEIVED
JAN 30 1990
ALEXANDRIA, VA.

REVISION	DATE	DESCRIPTION	BY	BY
△				
△				

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

DESIGNED: P.Lee / K. Swanson
DRAWN: K. Wahl / J. Hayes
CHECKED: D. J. Anderson

PAJARO RIVER, CALIFORNIA
UVAS CREEK LEVEE AT GILROY
SANTA CLARA COUNTY, CALIFORNIA
LEVEE IMPROVEMENT AND CONSTRUCTION
LOGS OF BORINGS
FOUNDATION
2F-7, DH-6A & 2F-8
PHASE I

SUBMITTED: Randall Anderson
CHIEF, SOIL DESIGN SECTION
DATE APPROVED: ______
SCALE. NO SCALE
SPEC. No. 7495
SHEET 14
FILE No. PA-18-4-05

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 1

Date Drilled: August 17, 1987
Type of Boring: 6-inch Auger
Hammer: 140 lbs
Remarks: East Abutment

Surface Elevation: 205.5 ± ft

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	1	27	SILTY CLAY (CL) Hard, damp to moist, dark brown with traces of roots Becoming more sandy	15	107	12490
5	2	23	SANDY CLAY (CL) Hard, damp, brown, with sand and traces of rootlets, slightly pitted	10	115	15660
10	3	29		10	113	10200
			Becoming more sandy with interbeds of sand (SC-SM)			
15	4	23	Very stiff, dark brown +#4 = 0% #200 = 51%	13	106	7580
20	5	24		11	117	6330
25	6	27	SILTY SAND (SM-SC) Medium dense, moist, gray with rust brown mottling and traces of fine gravel	11	119	2720
			CLAYEY SAND (SC) Medium dense, moist, brown mottled with rust and reddish-brown, with interbedded clayey and gravelly zones +#4 = 12% #200 = 19%			
30						

Project: 8715013R | Woodward-Clyde Consultants | Figure 4a

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 2

Date Drilled: August 17, 1987
Type of Boring: 6-inch Auger
Hammer: 140 lbs
Remarks: UVAS Creek Channel

Surface Elevation: 188.5 ± ft

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	1	12	SILTY SAND (SM) Medium dense, damp, brown, with gravel and cobbles			
			SANDY CLAY (CL) Stiff, moist, reddish brown to dark brown with dark gray mottling, with traces of decomposed roots and with gravel up to 1/2 inch diameter			
5	2	20		17	114	3670
			SILTY CLAY (CL) Very stiff, moist, brown with olive gray mottling, with traces of gravel			
10	3	46		21	109	7910
			GRAVELLY CLAY (CL-GC) Stiff, moist, reddish brown with some yellow mottling, with sandy and very gravelly zones			
15	4	68		22 17	107 116	3250 -
20	5	34	▽ After Drilling			
25	6	58	▽ ATD } With rock fragments up to 2 inch diameter	17	115	2820
			SILTY CLAY (CL) Stiff to very stiff, moist, light brown-gray, with some sand and fine gravel			
30						

Project: 8715013R | Woodward-Clyde Consultants | Figure 5a

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 3

Date Drilled: August 17, 1987
Type of Boring: 6-inch Auger
Hammer: 140 lbs
Remarks: UVAS Creek Channel

Surface Elevation: 188.5 ± ft

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	1	27	SILTY SAND (SM) Medium dense, damp, gray-brown, with coarse gravel and cobbles and some roots			
			SANDY SILTY CLAY (CL) Stiff, moist, reddish brown with light gray mottling, with fine gravel			
5	2	24		18	113	3210
			Becoming more gravelly			
10	3	62	SANDY CLAY (CL) Hard, moist, gray and brown with some black mottling and with some gravel	22	106	9410
15	4	52	CLAYEY SAND (SC) TO CLAYEY GRAVEL (GC-CL) Dense to very dense, brown to reddish brown with gravel up to 1-1/2 inch diameter ▽ ATD			
20	5	46		11	130	
25	6	65	+#4 = 42% #200 = 15%	12	128	1870
30						

Project: 8715013R | Woodward-Clyde Consultants | Figure 6a

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 4

Date Drilled: August 17, 1987
Type of Boring: 6-inch Auger
Hammer: 140 lbs
Remarks: West Abutment

Surface Elevation: 205.0 ± ft

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	1	21	SILTY CLAY (CL) Very stiff, dry to damp, dark brown, with traces of roots	15	93	7730
5	2	53	Becoming hard, with some rock fragments	11	117	10840
10	3	79/10"				
			SILTY CLAY (CL) Hard, damp to moist, reddish brown with dark brown mottling, and with some sand			
15	4	84/11"	Hard, damp	19	112	24030
			CLAYEY SAND (SC) TO CLAYEY GRAVEL (GC) Very dense, damp to moist, yellow and reddish brown with gravel up to 1 inch diameter +#4 = 42% #200 = 17%			
20	5	84		10	122	
25	6	30	GRAVELLY CLAY (CL) Stiff, moist, reddish brown with some coarse sand	16	119	2380
30						

Project: 8715013R | Woodward-Clyde Consultants | Figure 7a

BORING LOG LEGEND

▨	2-INCH I.D. MODIFIED CALIFORNIA SAMPLER
▤	2-INCH O.D. STANDARD SPLIT-SPOON SAMPLE
▭	BLOW COUNT WITH 140-lb. HAMMER FALLING 30"

WATER LEVEL MEASURED: ▽

ATD AT TIME OF DRILLING
24 hrs. TIME AFTER DRILLING COMPLETED

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 1 (Continued)

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	7	39	CLAYEY SAND (SC) TO GRAVELLY CLAY (GC-CL) ..... Continued Becoming more gravelly, (GC-CL), with gravel up to 1 inch diameter			
35	8	39	More reddish brown	15	111	2360
40	9	33		19	112	[illegible]
			BOTTOM OF BORING AT 41-1/2 FT Dry at time of drilling			
45						

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 2 (Continued)

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	7	49	SILTY CLAY (CL) ..... Continued	21	108	5950
35	8	90	SILTY SANDY CLAY (CL) Hard, moist, reddish brown, with sand and gravel up to 1 inch diameter	21	108	10330
			Becoming more gravelly			
40	9	59				
			BOTTOM OF BORING AT 41-1/2 FT			
45						
			NOTE: Boring 2 was advanced to a depth of 41-1/2 ft using a 6-inch diameter solid flight auger. An additional boring was advanced to a depth of about 10 ft using a 12-inch diameter solid flight auger at a location 5 ft north of the original boring location to verify the depth and extent of bedload materials encountered in the creek channel			
50						

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 3 (Continued)

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	7	75	CLAYEY SAND (SC) TO CLAYEY GRAVEL (GC-CL) ..... Continued			
35	8	56		17	119	2670
			Becoming more gravelly			
40	9	80				
			BOTTOM OF BORING AT 41-1/2 FT			
45						
			NOTE: Boring 3 was advanced to a depth of 41-1/2 ft using a 6-inch diameter solid flight auger. An additional boring was advanced to a depth of about 10 ft using a 12 inch diameter solid flight auger at a location 5 ft north of the original boring location to verify the depth and extent of bedload materials encountered in the creek channel			
50						

Project: THOMAS ROAD BRIDGE
Gilroy, California

Log of Boring No. 4 (Continued)

Depth Ft.	Samples	Blows/Ft	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compress. Strength, psf
	7	23	GRAVELLY CLAY (CL) ...... Continued Less gravelly	22	105	-
			▽ After Drilling ▽ ATD			
35	8	21		16	118	2770
40	9	27		27	100	2370
			BOTTOM OF BORING AT 41-1/2 FT			
45						

ENVIRONMENTAL
ENHANCEMENT
THRU ENGINEERING

FIELD EXPLORATION

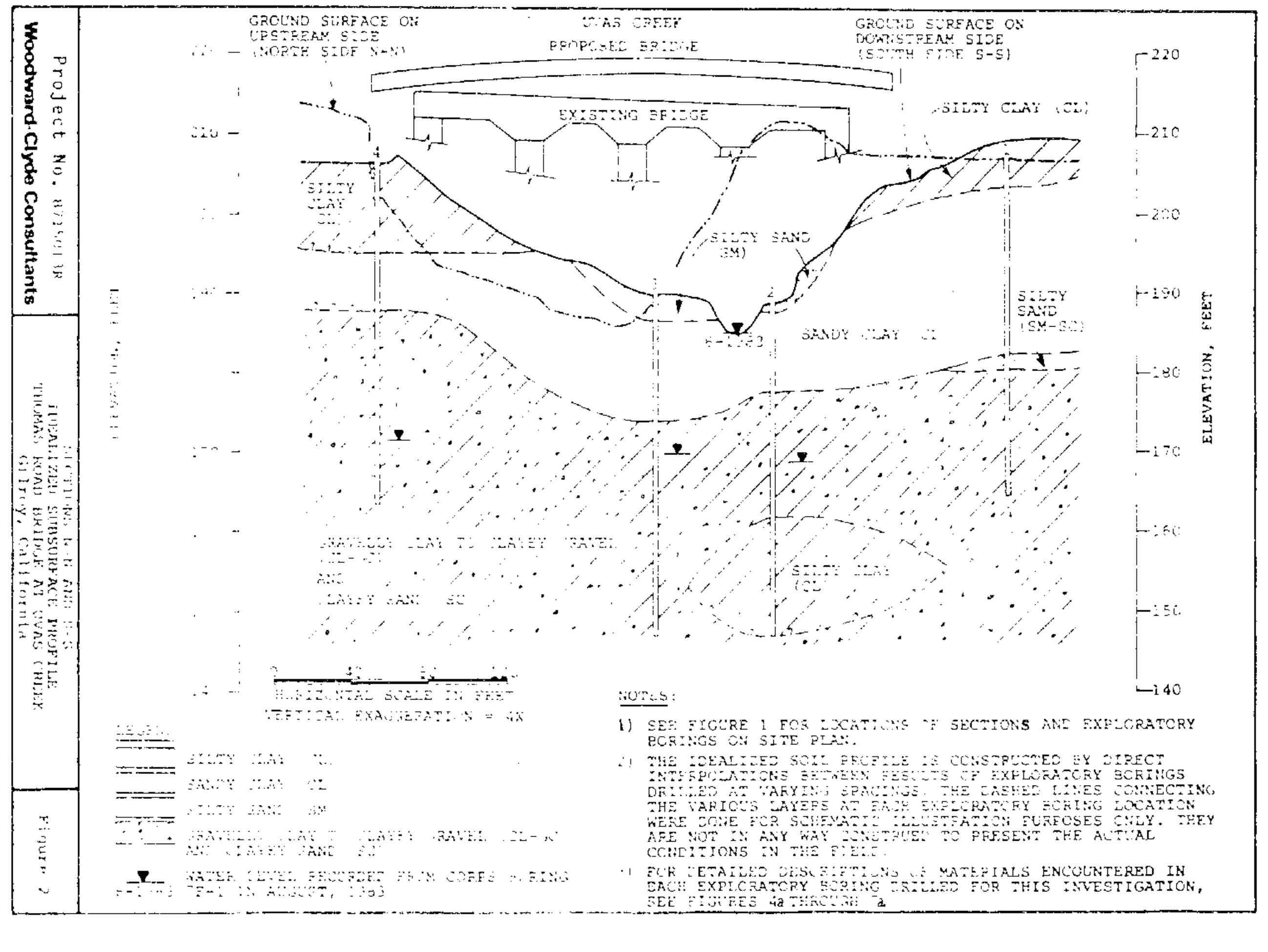
Four (4) sampled exploratory borings were drilled in the vicinity of the proposed bridge alignment to supplement the available subsurface information in an earlier investigation conducted by the Corps of Engineers in the area. The exploratory borings were advanced to a depth of 41-1/2 feet using a 6 inch diameter solid flight power auger. In addition, two probe borings were advanced to a depth of about 10 feet using a 12 inch diameter solid flight auger at locations approximately 5 feet north of Borings 2 and 3 to verify the depth and extent of soft and/or bedload materials in the creek channel. The locations of the borings are shown on the attached Site and Boring Location Plan, Figure 1. The drilling was done on August 17, 1987, under the supervision of a representative of Woodward-Clyde Consultants. Visual classifications of the soils encountered were made from the cuttings at the time of drilling. Samples of the underlying soils were obtained using either a modified California drive sampler (2 inch inside diameter and 2-1/2 inch outside diameter) or a standard split-spoon sampler (1-3/8 inch inside diameter and 2 inch outside diameter). The modified California sampler and split-spoon sampler were driven into the soil with a 140 pound hammer falling freely through 30 inches.

When the samplers were withdrawn from the hole, the samples were carefully removed, sealed to prevent moisture loss and returned to our laboratory for testing. Soil classifications made in the field were verified in the laboratory after further examination and testing. The attached Boring Log Legend Sheet, Figure 3, illustrates the notation used for the types of samplers and methods of advancing them, as presented on the Logs of Borings, Figures 4 through 7. The Logs of Borings by the Corps of Engineers are presented on Figures 8 and 9.

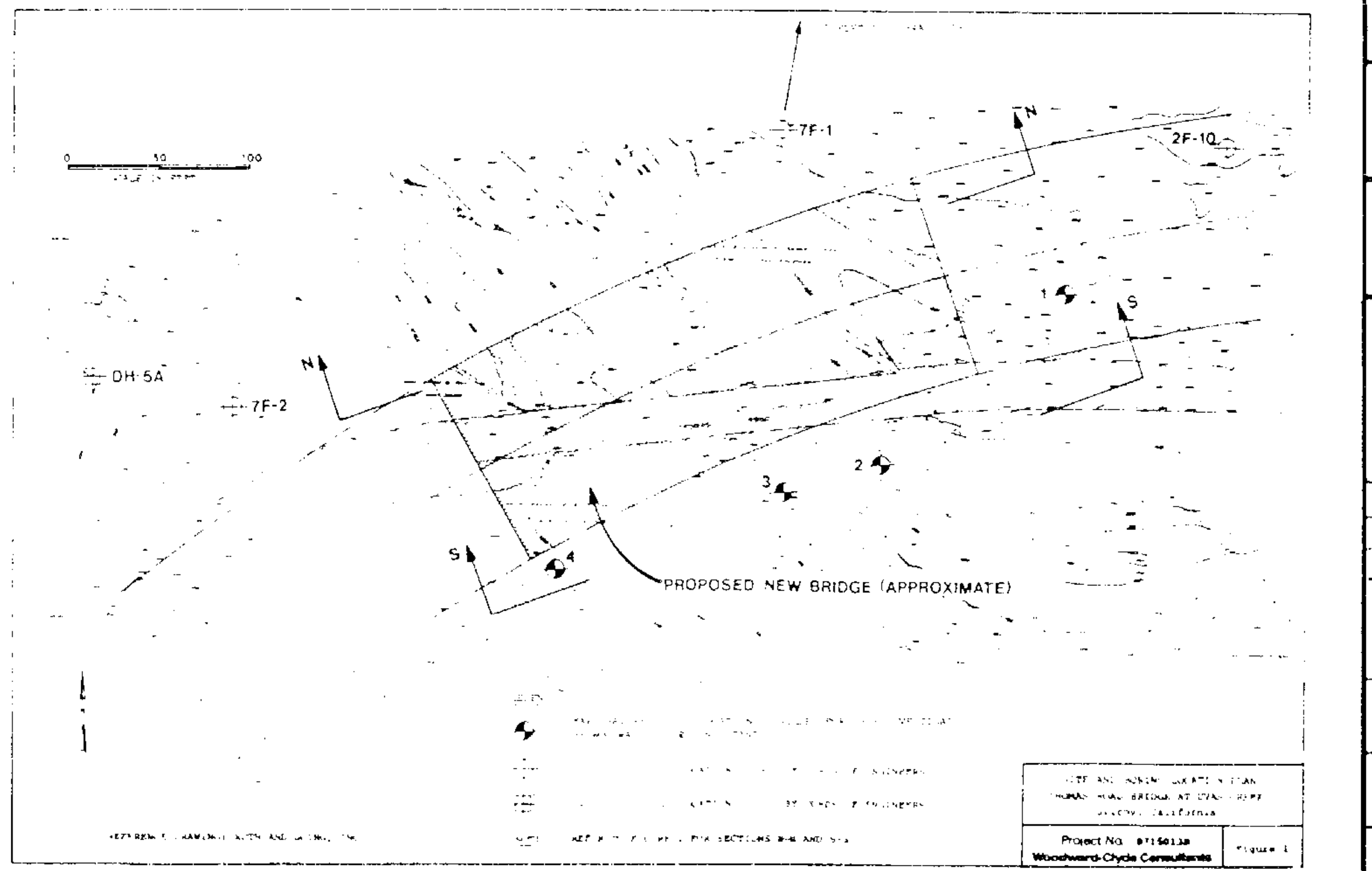
LABORATORY TESTS

The water content, dry density and unconfined compressive strength were determined for selected samples to estimate the strength and compressibility of the underlying soils. The results of these tests, together with the resistance to penetration of the sampler are shown at the corresponding sample locations on the Logs of Borings.

Grain size distrubitions were determined for selected samples of the sand, gravel and sandy clay deposits. The results of these tests are presented graphically on Figures 10 and 11.


Project No. 8715013R
Woodward-Clyde Consultants
SECTIONS N-N AND S-S
IDEALIZED SUBSURFACE PROFILE
THOMAS ROAD BRIDGE AT UVAS CREEK
Gilroy, California
Figure 2
GROUND SURFACE ON UPSTREAM SIDE (NORTH SIDE N-N)
UVAS CREEK
PROPOSED BRIDGE
GROUND SURFACE ON DOWNSTREAM SIDE (SOUTH SIDE S-S)
EXISTING BRIDGE
SILTY CLAY (CL)
SILTY SAND (SM)
SANDY CLAY (CL)
SILTY SAND (SM-SC)
GRAVELLY CLAY TO CLAYEY GRAVEL (CL-GC) AND CLAYEY SAND (SC)
SILTY CLAY (CL)
220
210
200
190
180
170
160
150
140
ELEVATION, FEET
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION = 4X
LEGEND
SILTY CLAY (CL)
SANDY CLAY (CL)
SILTY SAND (SM)
GRAVELLY CLAY TO CLAYEY GRAVEL (CL-GC) AND CLAYEY SAND (SC)
WATER LEVEL RECORDED FROM CORPS BORING TF-1 IN AUGUST, 1983

NOTES:
1) SEE FIGURE 1 FOR LOCATIONS OF SECTIONS AND EXPLORATORY BORINGS ON SITE PLAN.
2) THE IDEALIZED SOIL PROFILE IS CONSTRUCTED BY DIRECT INTERPOLATIONS BETWEEN RESULTS OF EXPLORATORY BORINGS DRILLED AT VARYING SPACINGS. THE DASHED LINES CONNECTING THE VARIOUS LAYERS AT EACH EXPLORATORY BORING LOCATION WERE DONE FOR SCHEMATIC ILLUSTRATION PURPOSES ONLY. THEY ARE NOT IN ANY WAY CONSTRUED TO PRESENT THE ACTUAL CONDITIONS IN THE FIELD.
3) FOR DETAILED DESCRIPTIONS OF MATERIALS ENCOUNTERED IN EACH EXPLORATORY BORING DRILLED FOR THIS INVESTIGATION, SEE FIGURES 4a THROUGH 7a



Santa Clara Valley Water District

ACCEPTED BY DISTRICT DATE 5/25/88
PROJECT ENGINEER RCE NO 25413
Bruce Wilton DIVISION ENGINEER RCE NO 10811

REV	NO.	DATE	DESCRIPTION	BY

DESIGNED
DRAWN
CHECKED

THOMAS ROAD AT UVAS CREEK
SOIL BORING LOGS

SUBMITTED
DATE APPROVED
SCALE AS SHOWN
DWG NO.
SHEET 49
FILE NO.

SANTA CLARA_CA Work Maps
SANTA CLARA_CA00279

AERO-GEODETIC CORPORATION

APPENDIX D

Field Exploration

ATTACHMENT D.1 Logs of Borings

ATTACHMENT D.2 Cone Penetration Test Logs

ATTACHMENT D.1

Logs of Borings

DATE: 10/8/2008	**LOG OF EXPLORATORY DRILL HOLE**	**B-1**

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification **PROJECT NUMBER:** 2227 E

DRILL RIG: CME 75, 140# auto hammer **LOGGED BY:** CSS

HOLE DIAMETER: 8" hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** 55.6' after 40 min.

DESCRIPTION OF EARTH MATERIALS Near CPT-1, approx. Sta 5+00, north bank crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
4" - 6" gravel base at surface												
FILL: SANDY LEAN CLAY to CLAYEY SAND: Very dark grayish brown (10YR 3/2), moist, very stiff to hard clay to dense sand; with rounded to subrounded fine to coarse sand and gravel	CL/ SC	1										
			S									
		2	D	33	4.5+							
			D		4.5+			13		119		
		3	S									
			D	33	3.25	51	42	13	22			(TXUU)
			D		3.5			17		107	14	6495
		4	S									
		5	D	26	4.5+							
			D		4.5							
		6	S									
			D	27	3.5							
			D		4.5		42	17	22	114		
ALLUVIUM: LEAN CLAY with SAND: Very dark gray (10YR 3/1), moist, very stiff to hard; with mostly fine sand	CL	7										
		8										
LEAN CLAY with SAND: Dark brown (7.5YR 3/2), moist, very stiff to hard; grades slightly coarser with depth; less moist with depth; some samples are porous	CL	9										
		10	S									
		11	D	25								
			D		4.5+			12		113		
		12										
		13										
		14										
		15	S									
		16	D	23		81	36	17	16			(TXUU)
			D					16		109	10	14370
		17										
		18										
		19										
		20										

DATE: 10/8/2008	**LOG OF EXPLORATORY DRILL HOLE**	**B-1**

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification **PROJECT NUMBER:** 2227 E

DRILL RIG: CME 75, 140# auto hammer **LOGGED BY:** CSS

HOLE DIAMETER: 8" hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** 55.6' after 40 min.

DESCRIPTION OF EARTH MATERIALS Near CPT-1, approx. Sta 5+00, north bank crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
LEAN CLAY with SAND: Brown (10YR 4/3), moist, very stiff to hard; with fine sand	CL		S									
			D		4.5+	82		17				(TXUU)
		21	D	16	4.5+			16		106	10	9007
		22										
		23										
grades coarser with depth gradational contact												
SANDY LEAN CLAY: Dark brown (10YR 3/3), moist, very stiff; with fine to coarse subangular to rounded sand; variable sand concentration and size	CL	24										
		25	S									
			D			54	31	17	12			(TXUU)
		26	D	19				17		113	15	6796
		27										
		28										
		29										
		30	S									
		31	D	19								
			D		3.2			18		116		
		32										
		33										
CLAYEY SAND with GRAVEL: Dark brown (10YR 3/3), moist to wet, medium dense; fine to coarse subangular to rounded sand; with mostly fine gravel	SC	34										
		35	S									
		36	D	21								
			D			15		12				
		37										
		38										
		39										
		40	S									

DATE: 10/8/2008	**LOG OF EXPLORATORY DRILL HOLE**	**B-1**

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification **PROJECT NUMBER:** 2227 E

DRILL RIG: CME 75, 140# auto hammer **LOGGED BY:** CSS

HOLE DIAMETER: 8" hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** 55.6' after 40 min.

DESCRIPTION OF EARTH MATERIALS Near CPT-1, approx. Sta 5+00, north bank crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
CLAYEY SAND with GRAVEL: continued, with mostly fine gravel	SC	41	I I	12		22		16				
		42										
grades coarser with depth		43										
		44										
WELL GRADED SAND with GRAVEL and SILT: Dark brown (10YR 3/3), wet; dense; subrounded to rounded fine to coarse sand; with fine to coarse gravel	SW-SM	45										
		46	S D D	41		10		8				
		47										
gradational contact		48										
WELL GRADED GRAVEL with SAND and SILT: Dark brown (10YR 3/3), moist to wet; very dense; subrounded to rounded fine to coarse sand and gravel	GW/GM	49										
		50										
		51	S I	50/4"								
		52										
		53										
		54										
WELL GRADED SAND with GRAVEL and SILT: Dark brown (10YR 3/3), moist to wet; very dense; subrounded to rounded fine to coarse sand and gravel	SW-SM	55										
		56	S I	50/5"								
		57										
		58										
		59										
		60										

DATE: 10/8/2008

LOG OF EXPLORATORY DRILL HOLE

B-1

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification

PROJECT NUMBER: 2227 E

DRILL RIG: CME 75, 140# auto hammer

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: -----

SAMPLER:

D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** 55.6' after 40 min.

DESCRIPTION OF EARTH MATERIALS Near CPT-1, approx. Sta 5+00, north bank crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
WELL GRADED GRAVEL with SAND and SILT: Dark brown (10YR 3/3), wet; very dense; subrounded to rounded fine to coarse gravel; with fine to coarse sand	GW/ GM	61	I I	63		9		8				
		62										
		63										
POORLY GRADED SAND: Dark brown (10YR 3/3), wet; very dense; mostly subrounded to rounded medium to coarse sand	SP	64										
		65										
		66	S D D	69		5		10				
		67										
		68										
BOTTOM OF HOLE = 68.5 Feet		69										
		70										
		71										
		72										
		73										
		74										
		75										
		76										
		77										
		78										
		79										
		80										

DATE: 10/7/2008

LOG OF EXPLORATORY DRILL HOLE

B-2

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification

PROJECT NUMBER: 2227 E

DRILL RIG: CME 75, 140# auto hammer

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH:
Initial: ---
Final: 38' after 1 hour

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 62+00, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
up to about 1 foot of gravel base												
FILL: CLAYEY SAND with GRAVEL: Brown (10YR 4/3), moist, very dense; fine to coarse rounded to subangular sand; with mostly fine gravel	SC	1										
		2	S D D	72		27		8		137		
		3	S D	50/6"								
		4										
		5	S D	50/6"		26		7		122		
		6	S D D	55								
ALLUVIUM: CLAYEY SAND with GRAVEL: Yellowish brown (10YR 5/4), dry, medium dense; rounded fine to coarse sand and fine gravel	SC	7										
		8	S D D	27								
POORLY GRADED SAND with GRAVEL and SILT: Yellowish brown (10YR 5/4), dry, medium dense; fine to coarse sand; with fine gravel	SP-SM	9	S D D	34		9		3		104		
		10										
SILTY SAND: Yellowish brown (10YR 5/4); dry; medium dense; fine sand	SM	11	S D D	23								
		12										
WELL GRADED GRAVEL with SAND: dark brown (10YR 3/2), dry, dense, fine to coarse subrounded to subangular gravel; with fine to coarse sand	GW	13										
		14										
		15										
		16	S D D	41		4		3		118		
		17										
		18										
		19										
		20										

DATE: 10/7/2008	**LOG OF EXPLORATORY DRILL HOLE**	**B-2**

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification **PROJECT NUMBER:** 2227 E

DRILL RIG: CME 75, 140# auto hammer **LOGGED BY:** CSS

HOLE DIAMETER: 8" hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** --- **Final:** 38' after 1 hour

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 62+00, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
WELL GRADED GRAVEL with SAND to WELL GRADED SAND with GRAVEL: dark brown (10YR 3/3), dry, medium dense; fine to coarse sand and fine gravel	GW/ SW	21	S I I	16		5						
		22										
		23										
		24										
		25										
moist, fine to coarse gravel		26	S I I	28								
		27										
		28										
WELL GRADED GRAVEL with SAND and SILT: dark brown (10YR 3/3), moist, very dense, fine to coarse subangular to subrounded gravel; with fine to coarse sand	GW- GM	29										
		30										
wet sample @ 30 feet		31	S I	50/5"								
		32										
		33										
		34										
		35										
medium dense to dense		36	S I I	30		6		6				
		37										
		38										
		39										
		40	S									

DATE: 10/7/2008	**LOG OF EXPLORATORY DRILL HOLE**	**B-2**

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification **PROJECT NUMBER:** 2227 E

DRILL RIG: CME 75, 140# auto hammer **LOGGED BY:** CSS

HOLE DIAMETER: 8" hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH:
Initial: ---
Final: 38' after 1 hour

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 62+00, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
POORLY GRADED GRAVEL with SAND and SILT: dark brown (10YR 3/3), moist, dense, fine to coarse gravel; with fine to coarse sand	GP-GM		I I	34								
		41										
		42										
		43										
		44										
POORLY GRADED SAND with GRAVEL and SILT: dark brown (10YR 3/3), wet, dense, fine to coarse sand; with fine to coarse gravel and cobbles up to 4 inches in size	SP-SM	45										
		46	S I I	38		11		12				
		47										
		48										
		49										
		50										
		51	S I I	65								
drills extremely slow		52										
		53										
		54										
		55										
		56	S I	76/11"		(no recovery)						
		57										
		58										
		59										
		60										

DATE: 10/7/2008

LOG OF EXPLORATORY DRILL HOLE

B-2

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification

PROJECT NUMBER: 2227 E

DRILL RIG: CME 75, 140# auto hammer

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH:
Initial: ---
Final: 38' after 1 hour

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 62+00, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
POORLY GRADED GRAVEL with SAND and SILT: Dark brown (10YR 3/3), wet; very dense; fine to coarse sand and gravel	GP-GM		S I	50/6"								
		61										
		62										
		63										
POORLY GRADED SAND with GRAVEL and SILT: dark brown (10YR 3/3), wet, very dense, fine to coarse sand and fine to coarse gravel	SP-SM	64										
		65	S I I	76		11		11				
		66										
		67										
POORLY GRADED SAND with SILT: dark brown (10YR 3/3), moist, very dense, medium to coarse sand	SP-SM	68										
		69	S I	50/6"								
BOTTOM OF HOLE = 69.5 Feet		70										
		71										
		72										
		73										
		74										
		75										
		76										
		77										
		78										
		79										
		80										

DATE: 10/6/2008

LOG OF EXPLORATORY DRILL HOLE

B-3

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification

PROJECT NUMBER: 2227 E

DRILL RIG: CME 75, 140# auto hammer

LOGGED BY: CSS

HOLE DIAMETER: 4" rods mud rotary/ below 11 ft. 8" hollow stem auger

HOLE ELEVATION: -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH:
Initial: ----
Final: 19' after 5 min.

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 80+00, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
FILL: CLAYEY SAND with GRAVEL: Brown (10YR 5/3), dry, very dense; fine to coarse mostly subangular sand; with fine gravel	SC	1	S D	50/4"								
		2	S									
LEAN CLAY with SAND: Brown (10YR 4/3), moist, very stiff to hard; variable amounts of fine sand; loosing circulation while drilling beginning at 2 feet	CL	3	D D	25	4.5+			13		109		
		4	S D	16	4.5+ 4.5+							
		5	D S									
		6	D D	18		79	33	15 13	12	93	2	(TXUU) 5528
		7	S D	16	4.5+ 4.5+							
switched to hollow stem		8	D S									
		9	D D	28	4.5+			13		101		
CLAYEY SAND: Very dark grayish brown (10YR 3/2) to dark brown (10YR 3/3); moist; medium dense; fine rounded sand	SC	10	S D	30								
		11	D			47		10				
		12										
		13										
		14										
POORLY GRADED SAND with SILT: Dark brown (10YR 3/3); dry; medium dense; mostly fine to coarse subrounded sand	SP-SM	15	S									
		16	D D	31		7						
		17										
		18										
		19										
		20										

DATE: 10/6/2008

LOG OF EXPLORATORY DRILL HOLE

B-3

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification

PROJECT NUMBER: 2227 E

DRILL RIG: CME 75, 140# auto hammer

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: -----

SAMPLER:

D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH:
Initial: ----
Final: 19' after 5 min.

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 80+00, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
WELL GRADED GRAVEL with SAND and SILT: dark brown (10YR 3/3), moist, medium dense to dense; fine to coarse gravel; with fine to coarse sand	GW-GM	21	S D D	32								
		22	S I I	33								
		23										
		24										
		25										
wet; dense to very dense		26	S D D	72		7		7				
		27										
POORLY GRADED SAND with GRAVEL and SILT: dark brown (10YR 3/3), moist to wet, dense to very dense, fine to coarse sand; with fine gravel	SP-SM	28										
		29										
		30										
		31	S I I	51								
		32										
		33										
		34										
		35										
more clayey, very dense		36	S I I	70		11		9				
		37										
		38										
		39										
		40	S									

DATE: 10/6/2008	**LOG OF EXPLORATORY DRILL HOLE**	**B-3**

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification **PROJECT NUMBER:** 2227 E

DRILL RIG: CME 75, 140# auto hammer **LOGGED BY:** CSS

HOLE DIAMETER: 8" hollow stem auger **HOLE ELEVATION:** -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH: **Initial:** ---- **Final:** 19' after 5 min.

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 80+00, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
POORLY GRADED SAND WITH GRAVEL and SILT: continued, dense	SP-SM	41	I I	43								
		42										
		43										
		44										
		45										
		46	S I I	43								
		47										
CLAYEY SAND with GRAVEL: Brown (10YR 4/3), moist to wet, very dense; fine to coarse sand; with fine to coarse gravel	SC	48										
		49										
		50										
		51	S I I	52		14		11				
		52										
		53										
		54										
		55										
dense		56	S I I	43								
		57										
		58										
		59										
		60										

DATE: 10/6/2008

LOG OF EXPLORATORY DRILL HOLE

B-3

PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification

PROJECT NUMBER: 2227 E

DRILL RIG: CME 75, 140# auto hammer

LOGGED BY: CSS

HOLE DIAMETER: 8" hollow stem auger

HOLE ELEVATION: -----

SAMPLER:
D = 3" OD, 2½" ID Split-spoon
X = 2½" OD, 2" ID Split-spoon
I = Standard Penetrometer (2" OD SPT)
S = Slough in sample

GROUND WATER DEPTH:
Initial: ----
Final: 19' after 5 min.

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 80+00, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
CLAYEY GRAVEL with SAND: brown (10YR 3/2), moist, very dense, fine to coarse gravel; with fine to coarse sand	GC	61	S I	50/6"		20		14				
		62										
		63										
		64										
grades finer		65										
CLAYEY SAND: Strong brown (7.5YR 4/6), moist, medium dense; with fine to coarse sand	SC	66	S I I	27		40		19				
		67										
		68										
LEAN CLAY with SAND: Yellowish brown (10YR 5/4), moist, hard; with fine sand	CL	69										
		70										
		71	S D D	67	4.5+			19		114		
BOTTOM OF HOLE = 71.5 Feet		72										
		73										
		74										
		75										
		76										
		77										
		78										
		79										
		80										

DATE: 10/7/2008	**LOG OF EXPLORATORY DRILL HOLE**	**B-4**

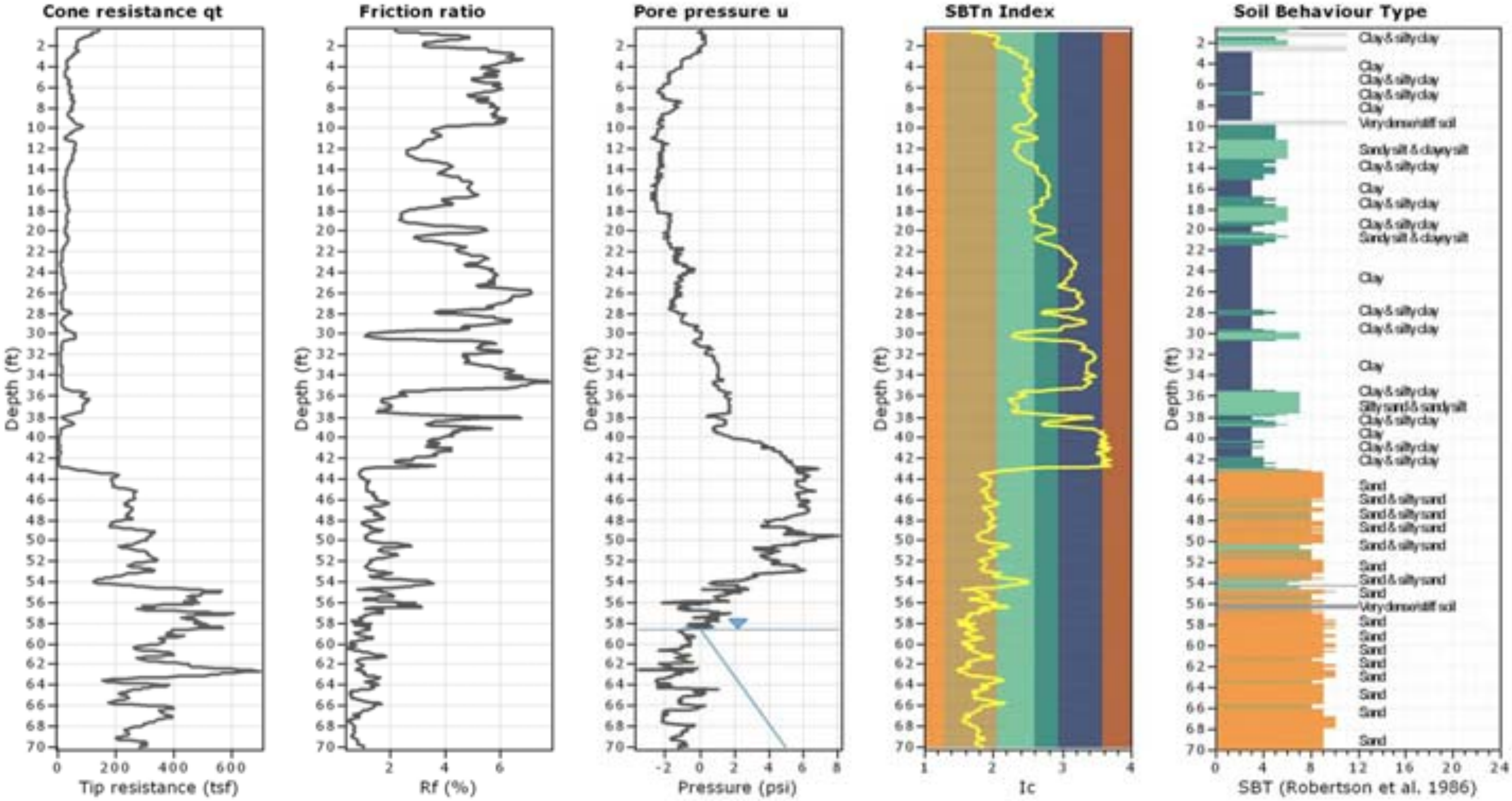
PROJECT NAME: SCVWD Uvas Creek Levee FEMA Recertification	**PROJECT NUMBER:** 2227 E
DRILL RIG: CME 75, 140# auto hammer	**LOGGED BY:** CSS
HOLE DIAMETER: 8" hollow stem auger	**HOLE ELEVATION:** -----
SAMPLER: D = 3" OD, 2½" ID Split-spoon X = 2½" OD, 2" ID Split-spoon I = Standard Penetrometer (2" OD SPT) S = Slough in sample	**GROUND WATER DEPTH:** **Initial:** ----- **Final:** -----

DESCRIPTION OF EARTH MATERIALS Approx. Sta. 23+50, north levee crest	SOIL TYPE	DEPTH (ft)	SAMPLE	BLOWS PER FOOT	POCKET PEN (tsf)	% PASSING #200 SIEVE	LIQUID LIMIT	WATER CONTENT	PLASTICITY INDEX	DRY DENSITY (pcf)	FAILURE STRAIN (%)	UNCONFINED COMPRESSIVE STRENGTH (psf)
up to about 1 foot of gravel base												
		1										
FILL: SANDY LEAN CLAY: Grayish brown (10YR 3/2), moist, hard; with fine to coarse subrounded to rounded sand	CL		S									
			D		4.5+							
		2		26								
			D		4.5+							
			S									
		3	D									
				31								
			D		4.5+							
		4	S									
			D			66	47	14	29			(TXUU)
		5		28								
			D		4.5+			13		115	4	13570
			S									
		6	D		4.5+							
				43								
			D		4.5+							
		7	S									
			D		4.5+							
		8		45								
			D		4.5+			13		121		
		9										
SANDY LEAN CLAY: Very dark grayish brown (10YR 3/2), dry to moist; hard; mostly fine sand; minor medium to coarse subrounded sand; porous	CL	10										
			S									
			D		4.5+							
		11		35								
			D		4.5+	68	32	12	12	107		
		12										
		13										
brown (10YR 4/3); porous			S									
		14										
			D		4.5+							
				36								
			D		4.5+							
		15										
BOTTOM OF HOLE = 15 Feet No Groundwater Encountered		16										
		17										
		18										
		19										
		20										

ATTACHMENT D.2

Cone Penetration Test Logs

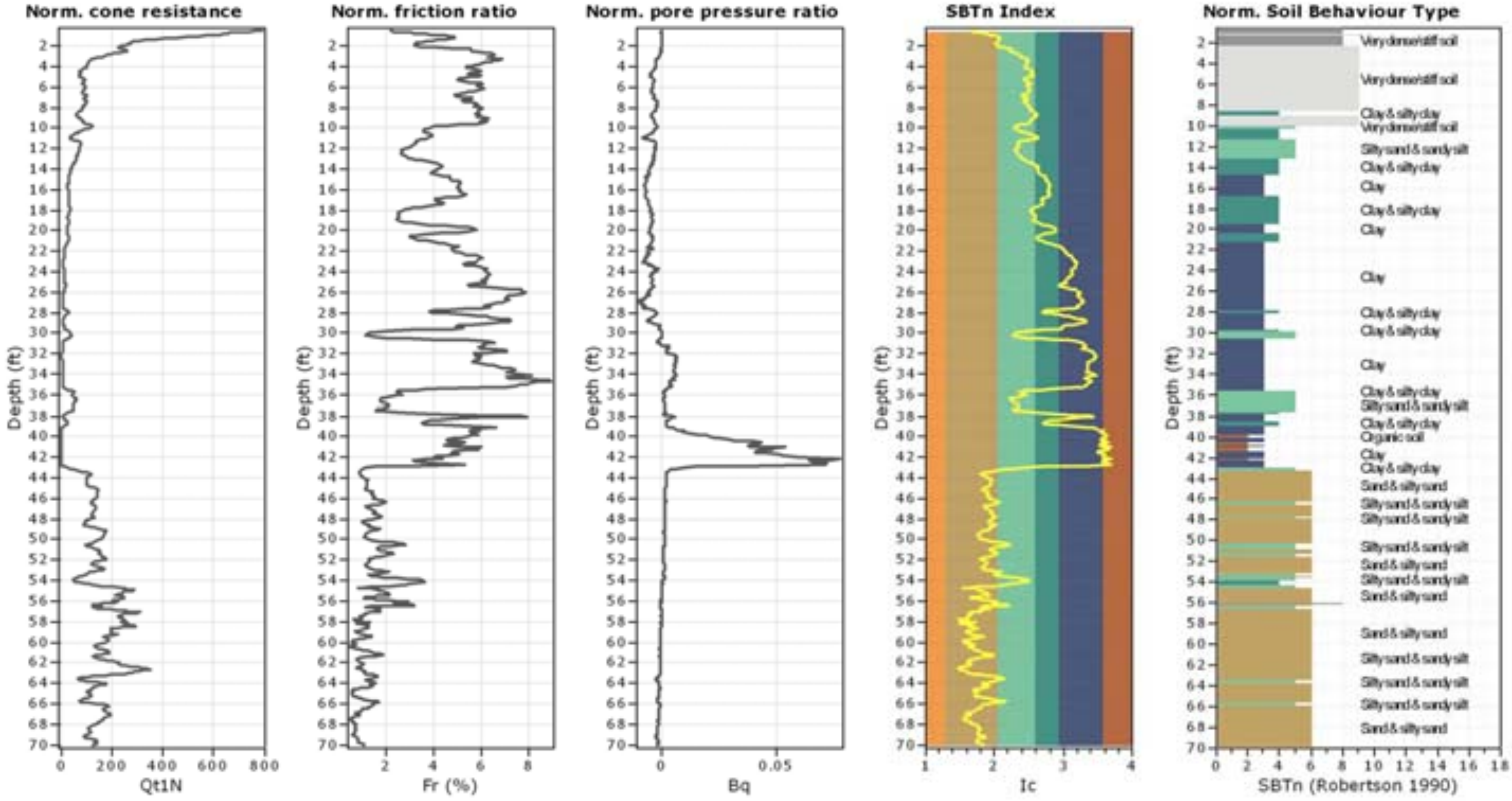
Project: Uvas_Creek **CPT: CPT-01 - Total depth: 70.06 (ft)**



SBT legend

🟥 1. Sensitive fine grained	🟩 4. Clay & silty clay	🟩 7. Silty sand & sandy silt	🟧 10. Sand
🟫 2. Organic material	🟩 5. Clay & silty clay	🟫 8. Sand & silty sand	⬜ 11. Very dense/stiff soil
🟦 3. Clay	🟩 6. Sandy silt & clayey silt	🟧 9. Sand	⬛ 12. Very dense/stiff soil

Project: Uvas_Creek **CPT: CPT-01 - Total depth: 70.06 (ft)**

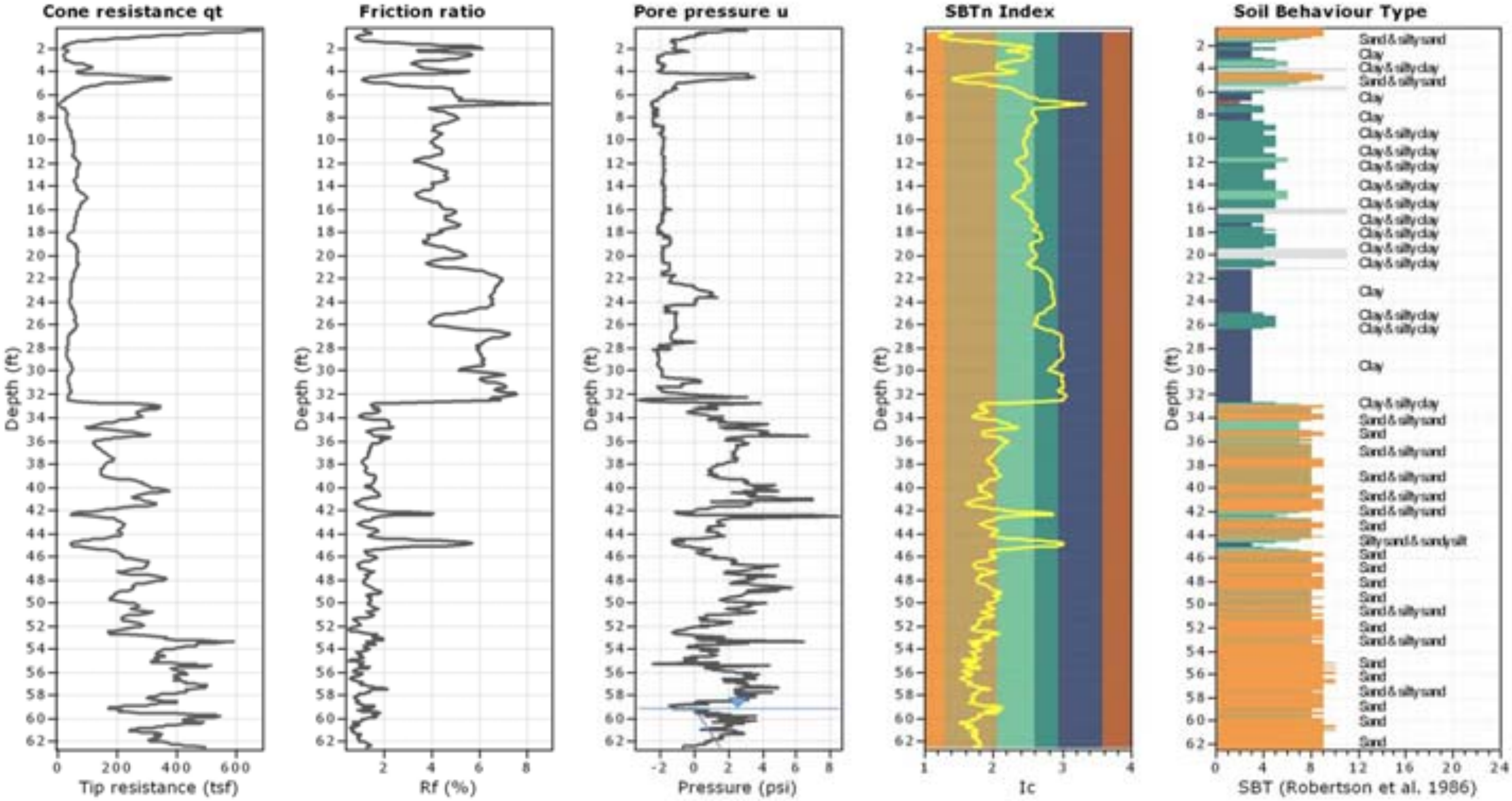


SBTn legend

🟥 1. Sensitive fine grained	🟩 4. Clayey silt to silty clay	🟧 7. Gravely sand to sand
🟫 2. Organic material	🟩 5. Silty sand to sandy silt	⬛ 8. Very stiff sand to clayey sand
🟦 3. Clay to silty clay	🟫 6. Clean sand to silty sand	⬜ 9. Very stiff fine grained

Project: Uvas_Creek

CPT: CPT-02 - Total depth: 62.50 (ft)

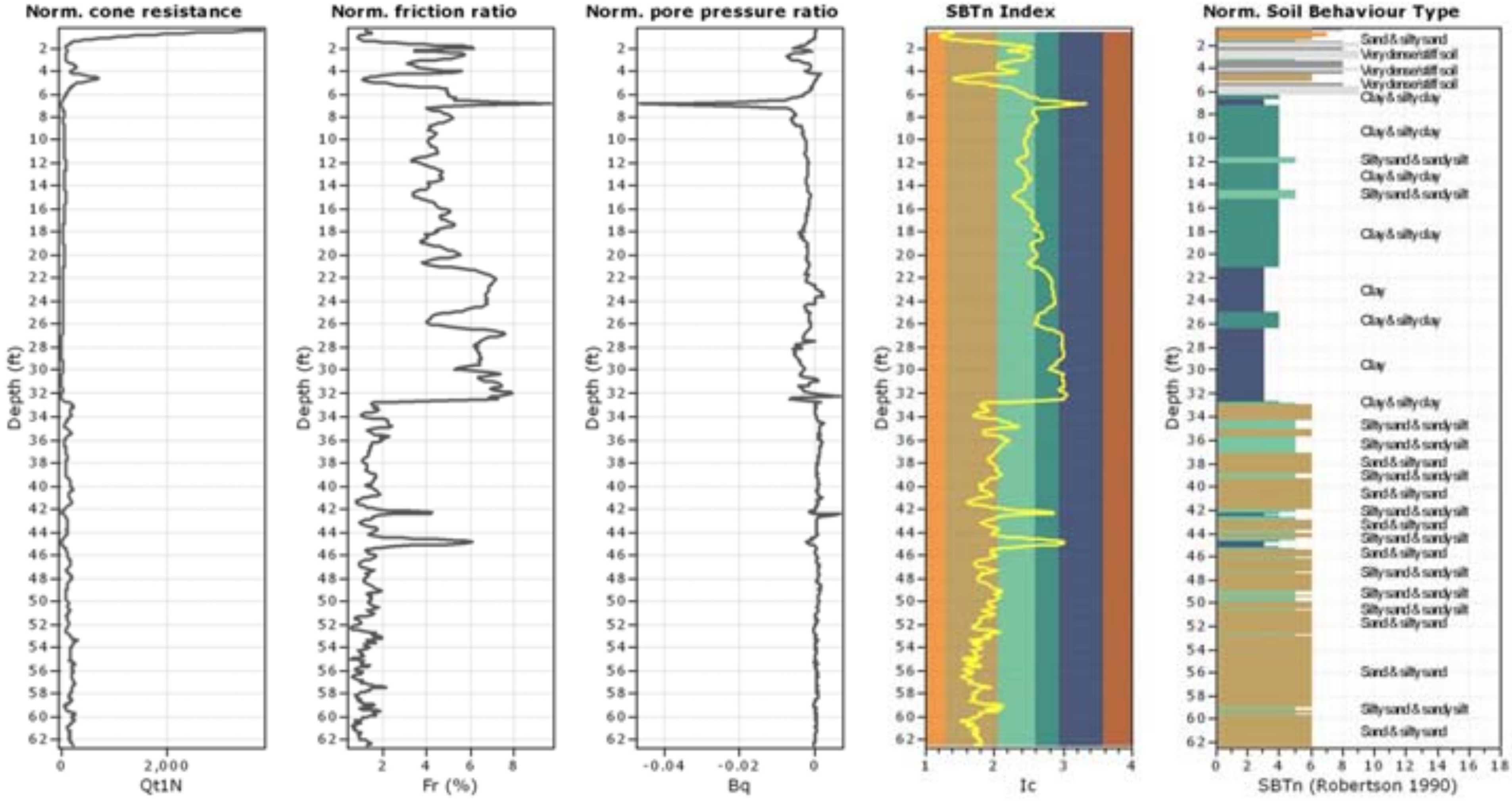


SBT legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay
- 🟩 4. Clay & silty clay
- 🟩 5. Clay & silty clay
- 🟩 6. Sandy silt & clayey silt
- 🟩 7. Silty sand & sandy silt
- 🟫 8. Sand & silty sand
- 🟧 9. Sand
- 🟧 10. Sand
- ⬜ 11. Very dense/stiff soil
- ⬛ 12. Very dense/stiff soil

CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:20 PM
Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt

Project: Uvas_Creek **CPT: CPT-02 - Total depth: 62.50 (ft)**

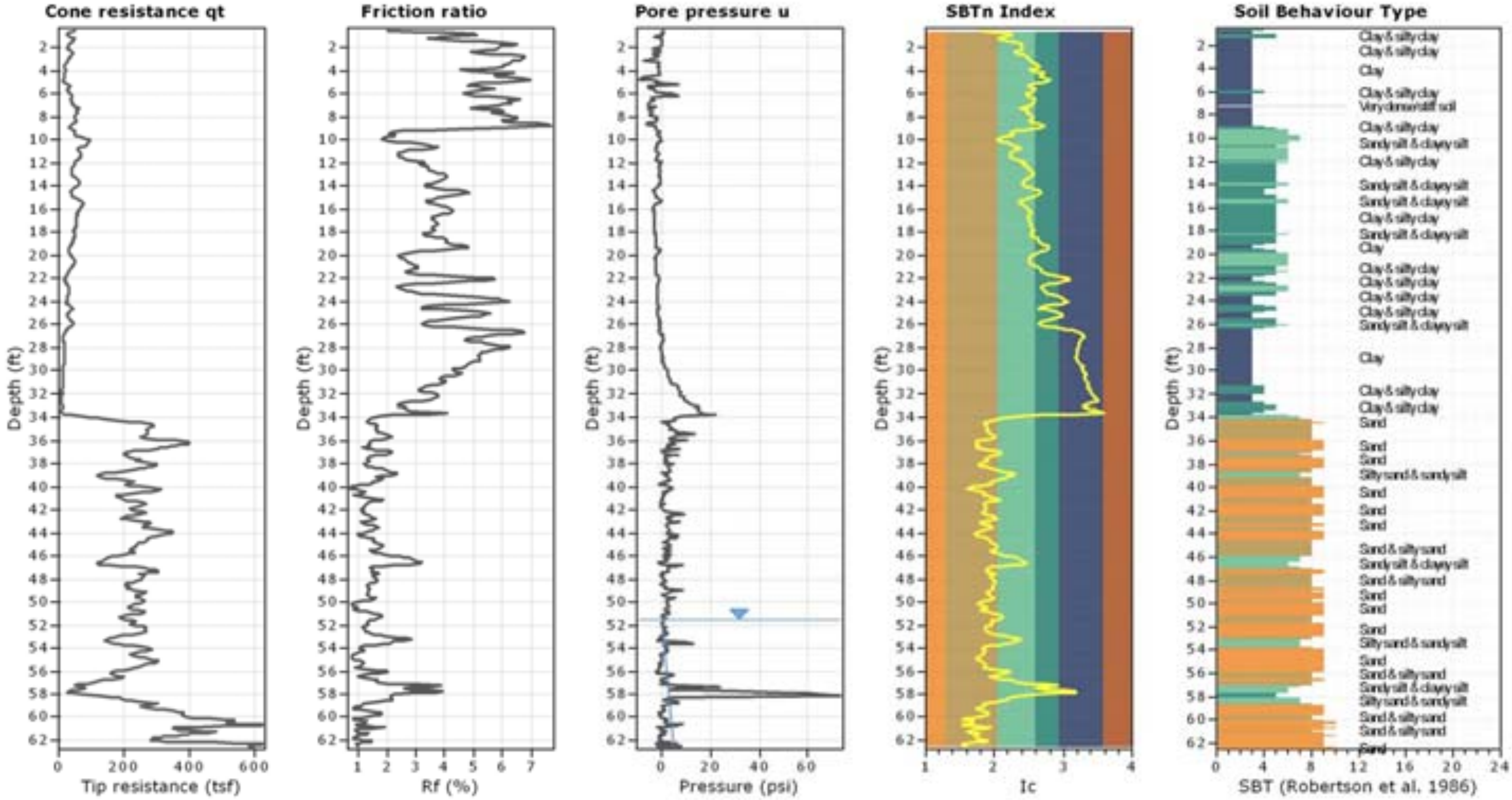


SBTn legend

🟥 1. Sensitive fine grained	■ 4. Clayey silt to silty clay	■ 7. Gravely sand to sand
■ 2. Organic material	■ 5. Silty sand to sandy silt	■ 8. Very stiff sand to clayey sand
■ 3. Clay to silty clay	■ 6. Clean sand to silty sand	□ 9. Very stiff fine grained

Project: Uvas_Creek

CPT: CPT-03 - Total depth: 62.52 (ft)

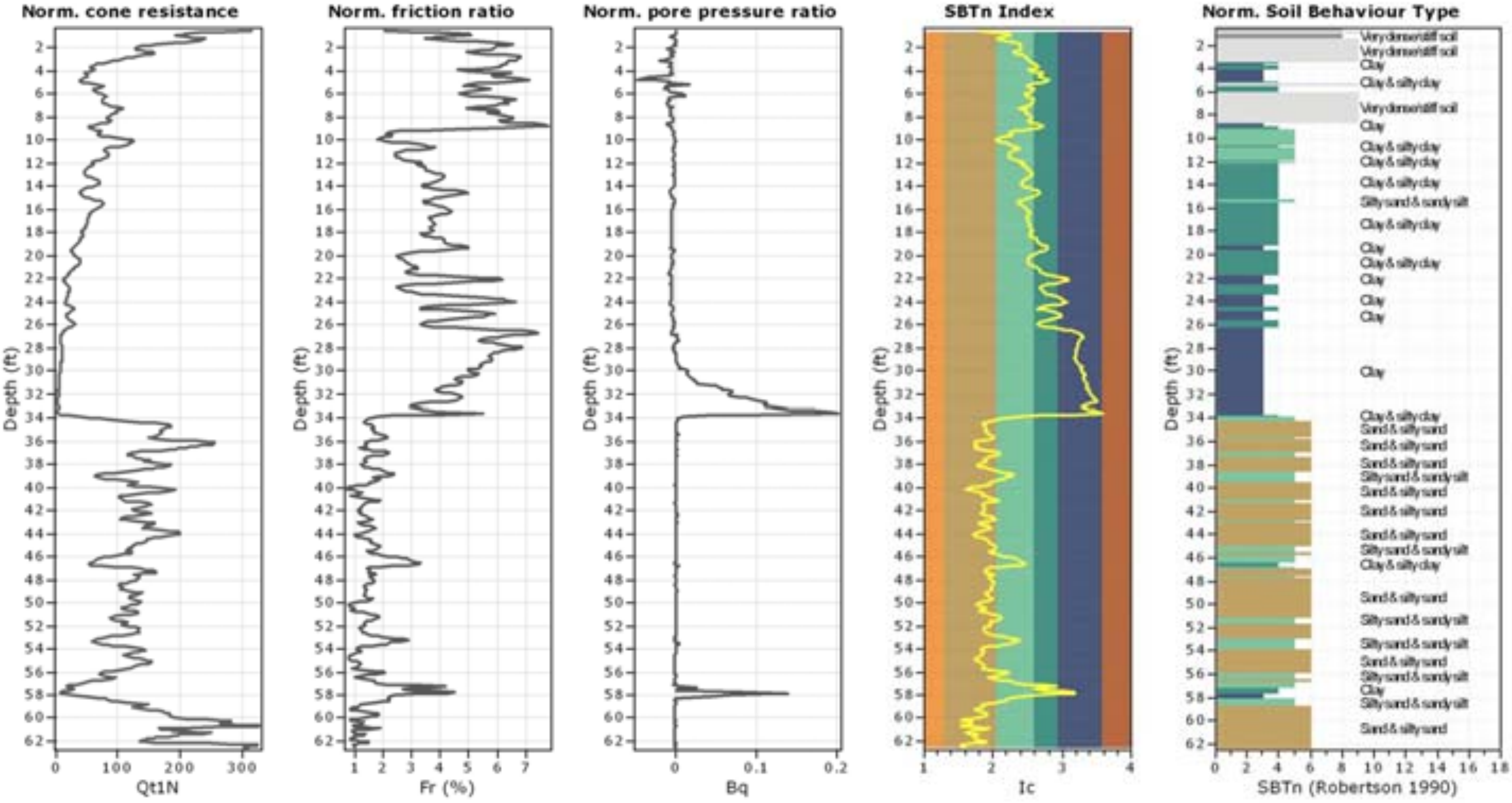


SBT legend

🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay
🟩 4. Clay & silty clay
🟩 5. Clay & silty clay
🟩 6. Sandy silt & clayey silt
🟩 7. Silty sand & sandy silt
🟫 8. Sand & silty sand
🟧 9. Sand
🟧 10. Sand
⬜ 11. Very dense/stiff soil
⬛ 12. Very dense/stiff soil

CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:21 PM
Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt

Project: Uvas_Creek **CPT: CPT-03 - Total depth: 62.52 (ft)**



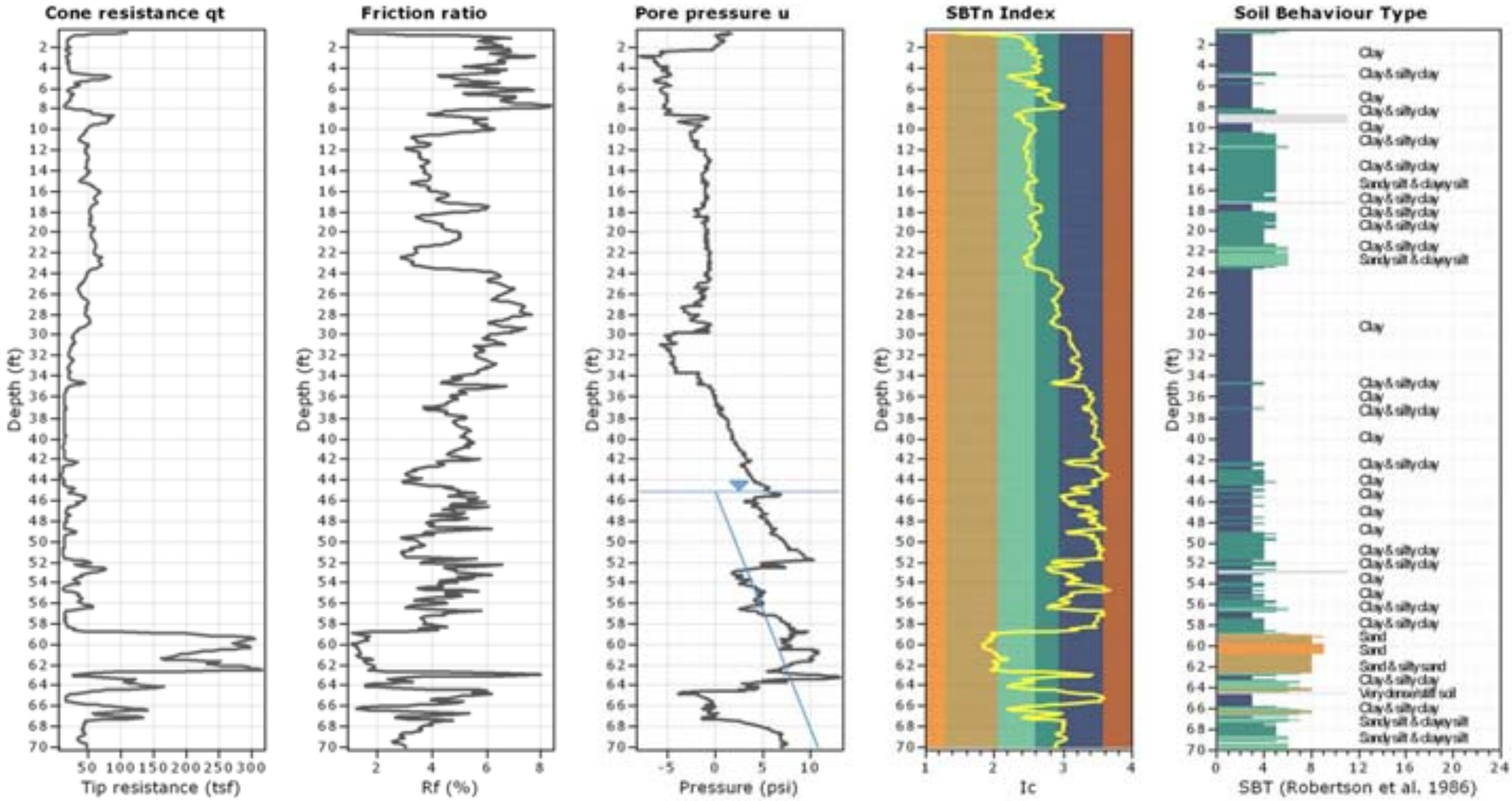
SBTn legend

🟥 1. Sensitive fine grained	🟩 4. Clayey silt to silty clay	🟧 7. Gravely sand to sand
🟫 2. Organic material	🟩 5. Silty sand to sandy silt	⬛ 8. Very stiff sand to clayey sand
🟦 3. Clay to silty clay	🟨 6. Clean sand to silty sand	⬜ 9. Very stiff fine grained

CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:21 PM
Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt

Project: Uvas_Creek

CPT: CPT-04 - Total depth: 70.01 (ft)

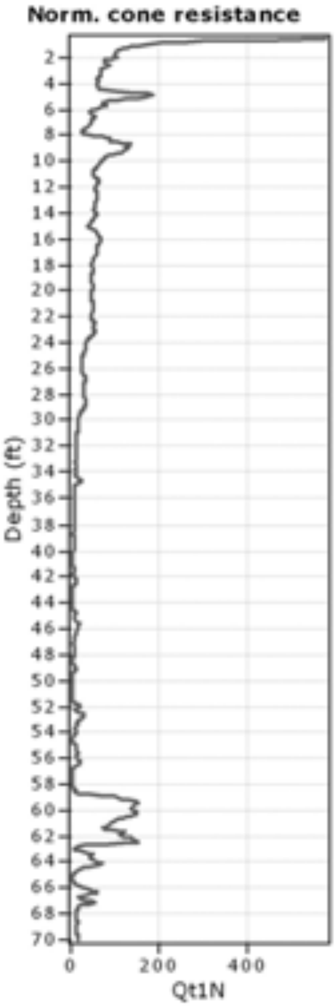


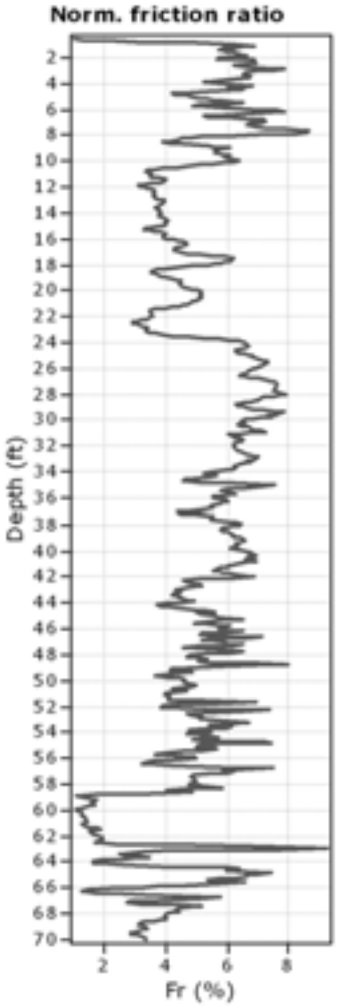
SBT legend

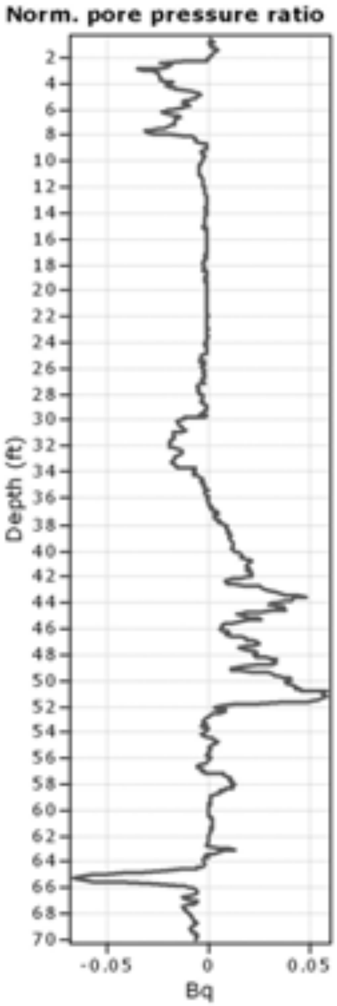
🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay
🟩 4. Clay & silty clay
🟩 5. Clay & silty clay
🟩 6. Sandy silt & clayey silt
🟩 7. Silty sand & sandy silt
🟫 8. Sand & silty sand
🟧 9. Sand
🟧 10. Sand
⬜ 11. Very dense/stiff soil
⬛ 12. Very dense/stiff soil

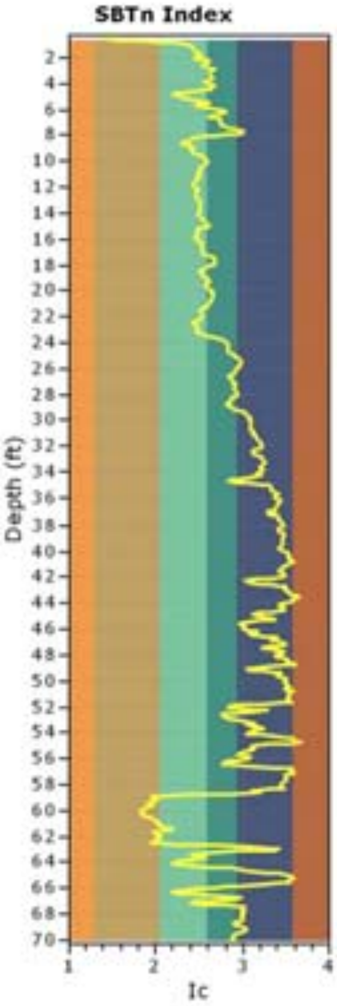
Project: Uvas_Creek

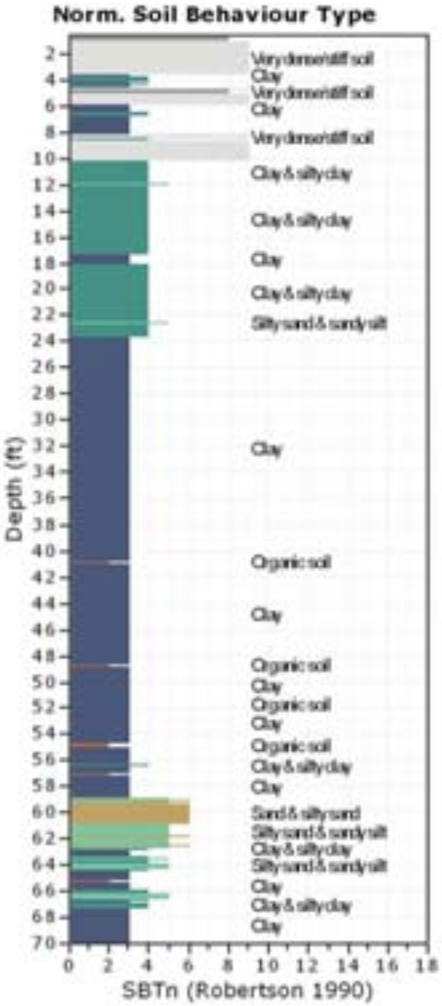
CPT: CPT-04 - Total depth: 70.01 (ft)









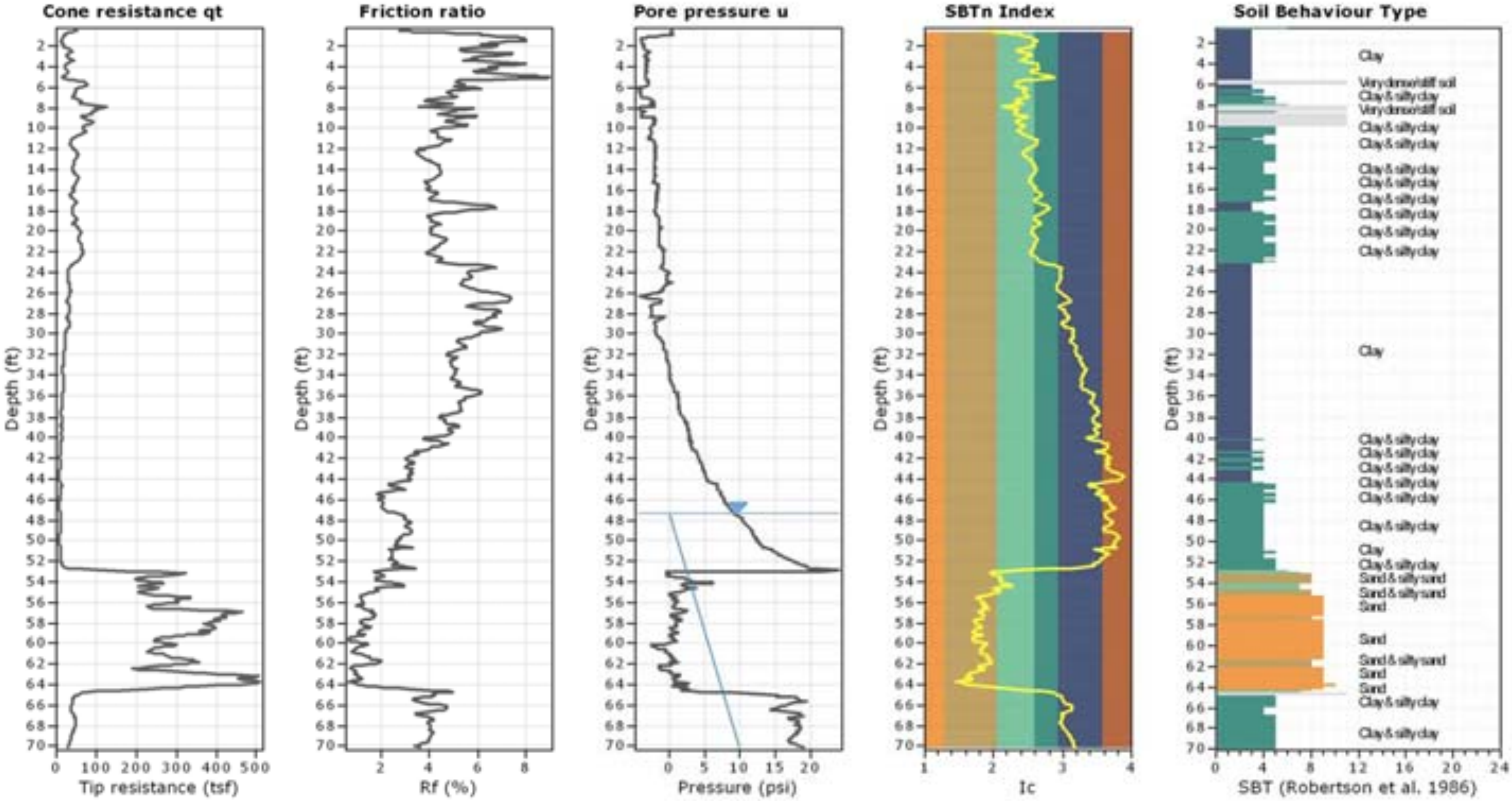


SBTn legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty clay
- 🟩 5. Silty sand to sandy silt
- 🟨 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to clayey sand
- ⬜ 9. Very stiff fine grained

CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:23 PM
Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt

Project: Uvas_Creek **CPT: CPT-05 - Total depth: 70.09 (ft)**

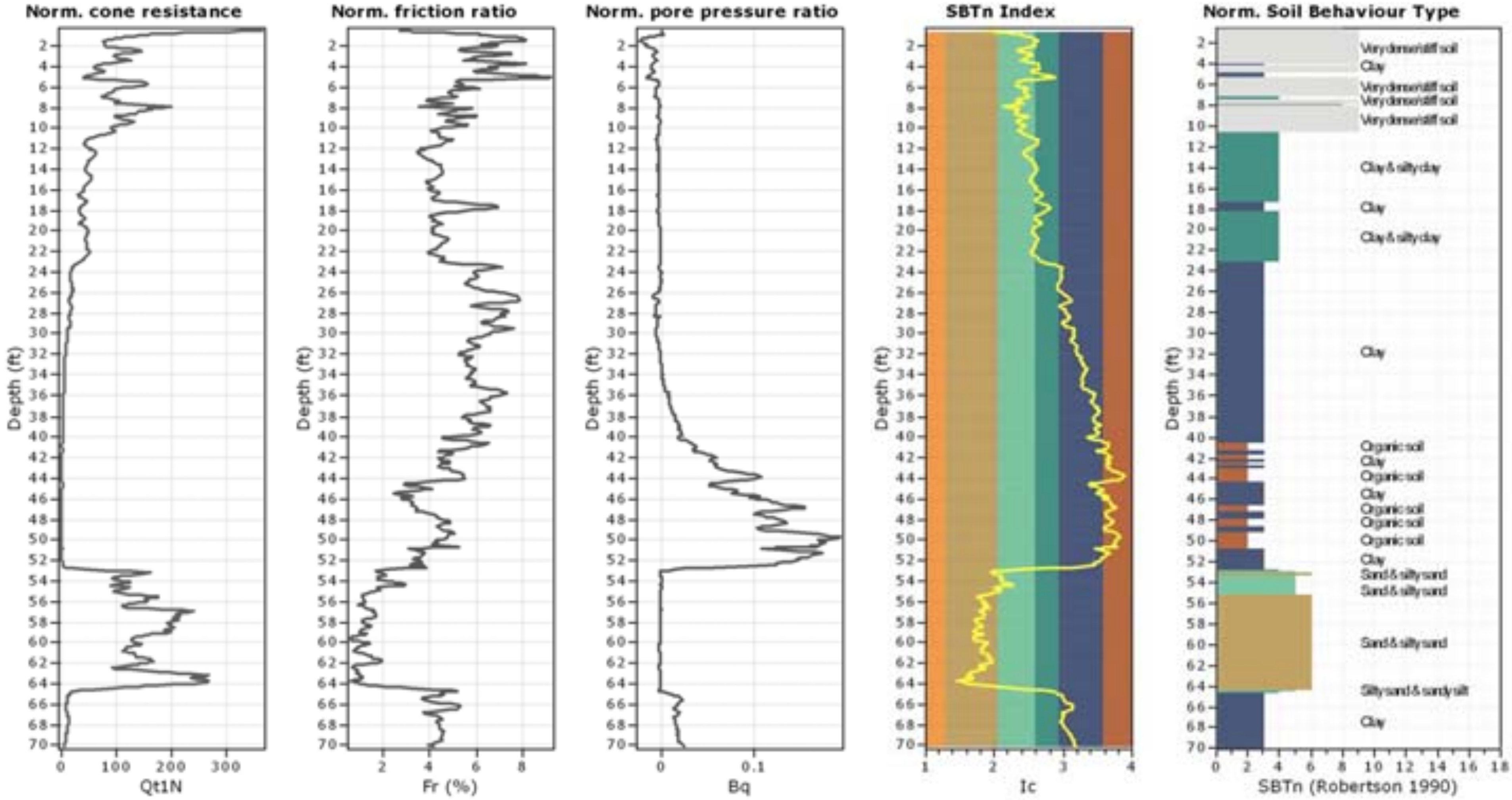


SBT legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay
- 🟩 4. Clay & silty clay
- 🟩 5. Clay & silty clay
- 🟩 6. Sandy silt & clayey silt
- 🟩 7. Silty sand & sandy silt
- 🟫 8. Sand & silty sand
- 🟧 9. Sand
- 🟧 10. Sand
- ⬜ 11. Very dense/stiff soil
- ⬜ 12. Very dense/stiff soil

amec

Project: Uvas_Creek **CPT: CPT-05 - Total depth: 70.09 (ft)**

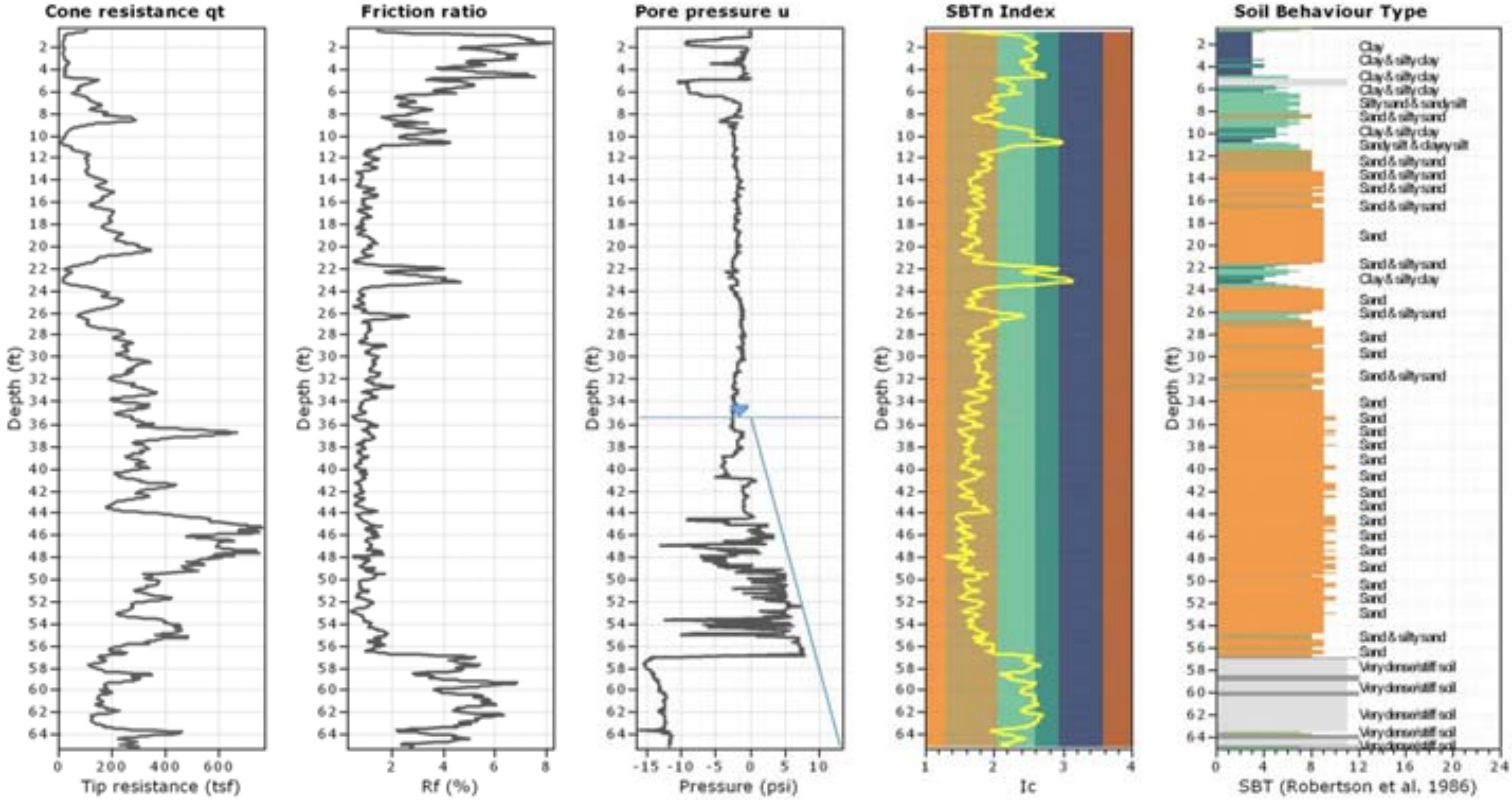


SBTn legend

🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay to silty clay
🟩 4. Clayey silt to silty clay
🟩 5. Silty sand to sandy silt
🟨 6. Clean sand to silty sand
🟧 7. Gravely sand to sand
⬛ 8. Very stiff sand to clayey sand
⬜ 9. Very stiff fine grained

amec

Project: Uvas_Creek **CPT: CPT-06 - Total depth: 65.05 (ft)**

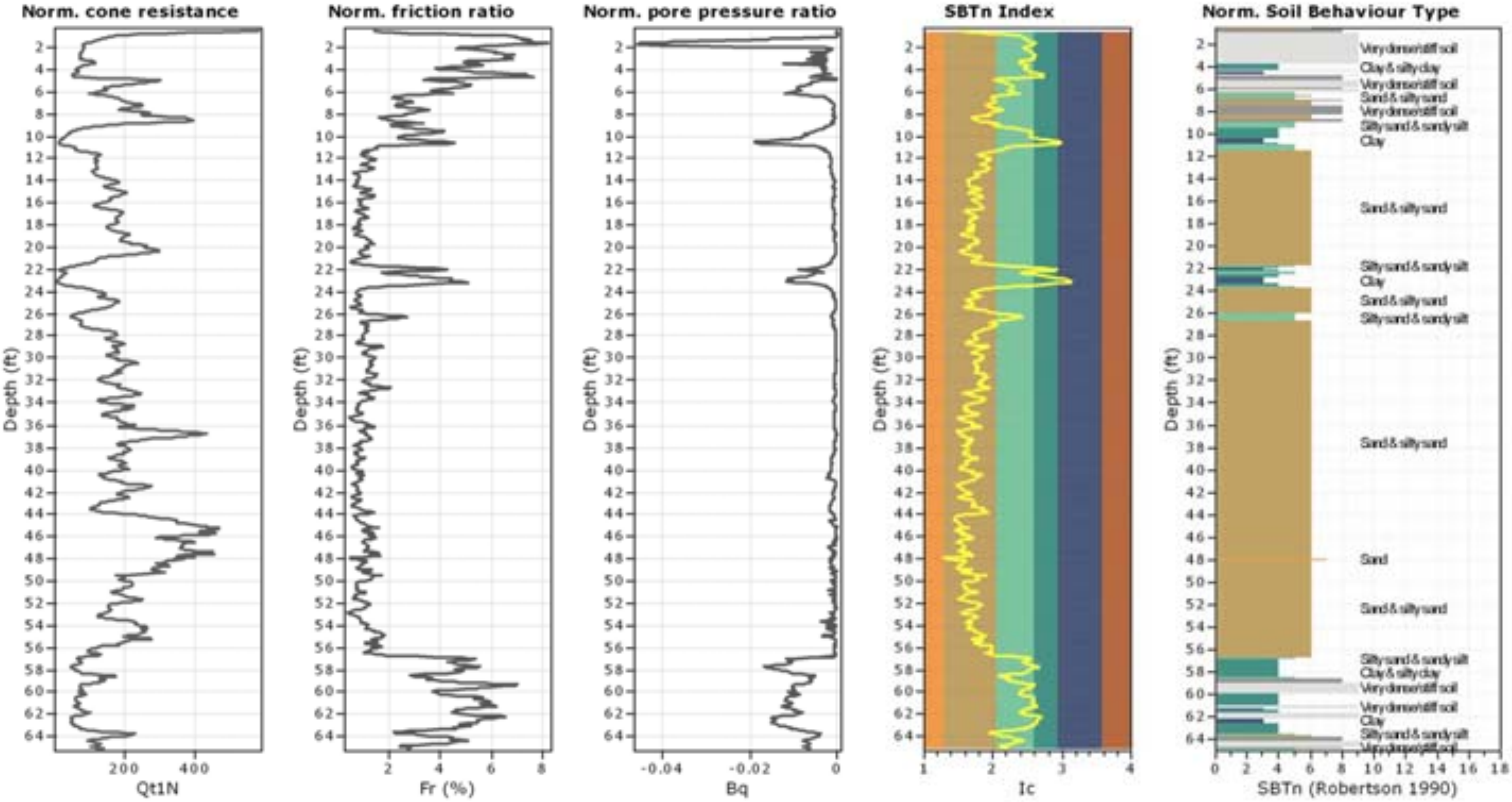


SBT legend

🟥 1. Sensitive fine grained	🟩 4. Clay & silty clay	🟩 7. Silty sand & sandy silt	🟧 10. Sand
🟫 2. Organic material	🟩 5. Clay & silty clay	🟫 8. Sand & silty sand	⬜ 11. Very dense/stiff soil
🟦 3. Clay	🟩 6. Sandy silt & clayey silt	🟧 9. Sand	⬜ 12. Very dense/stiff soil

Project: Uvas_Creek

CPT: CPT-06 - Total depth: 65.05 (ft)

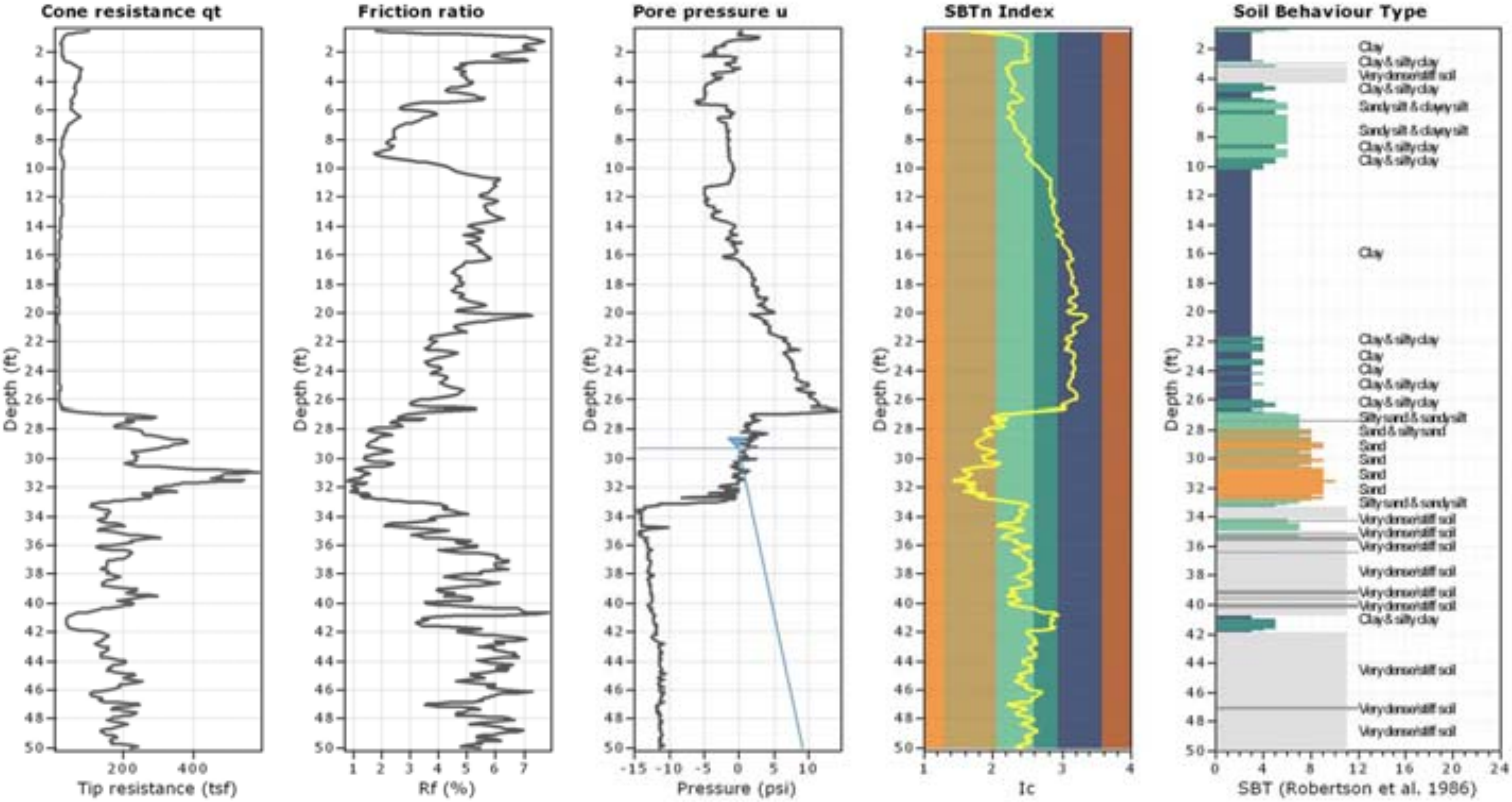


SBTn legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty clay
- 🟩 5. Silty sand to sandy silt
- 🟨 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to clayey sand
- ⬜ 9. Very stiff fine grained

CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:28 PM

Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt

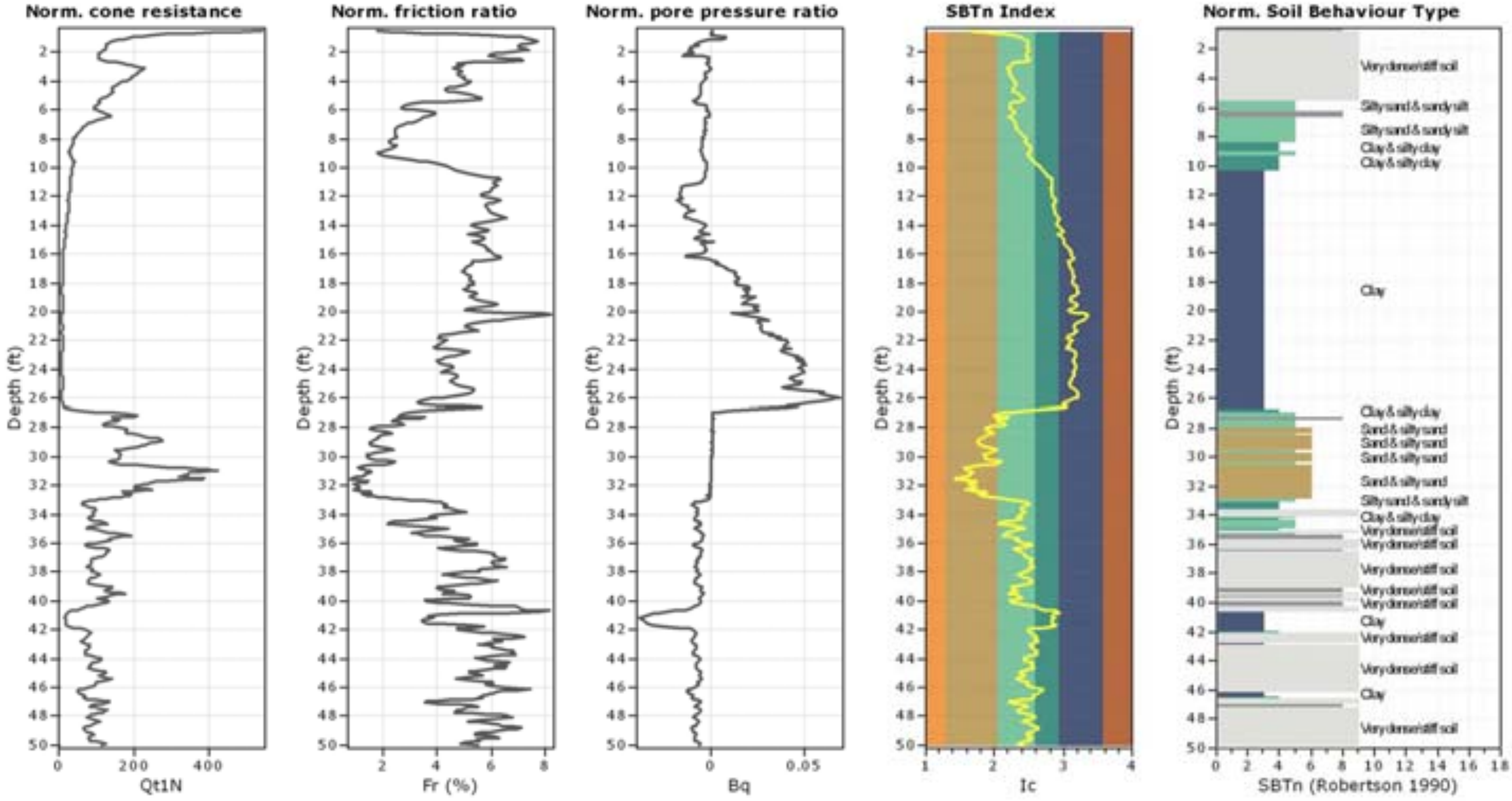


SBT legend

🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay
🟩 4. Clay & silty clay
🟩 5. Clay & silty clay
🟩 6. Sandy silt & clayey silt
🟩 7. Silty sand & sandy silt
🟫 8. Sand & silty sand
🟧 9. Sand
🟧 10. Sand
⬜ 11. Very dense/stiff soil
⬜ 12. Very dense/stiff soil

Project: Uvas_Creek

CPT: CPT-07 - Total depth: 50.02 (ft)

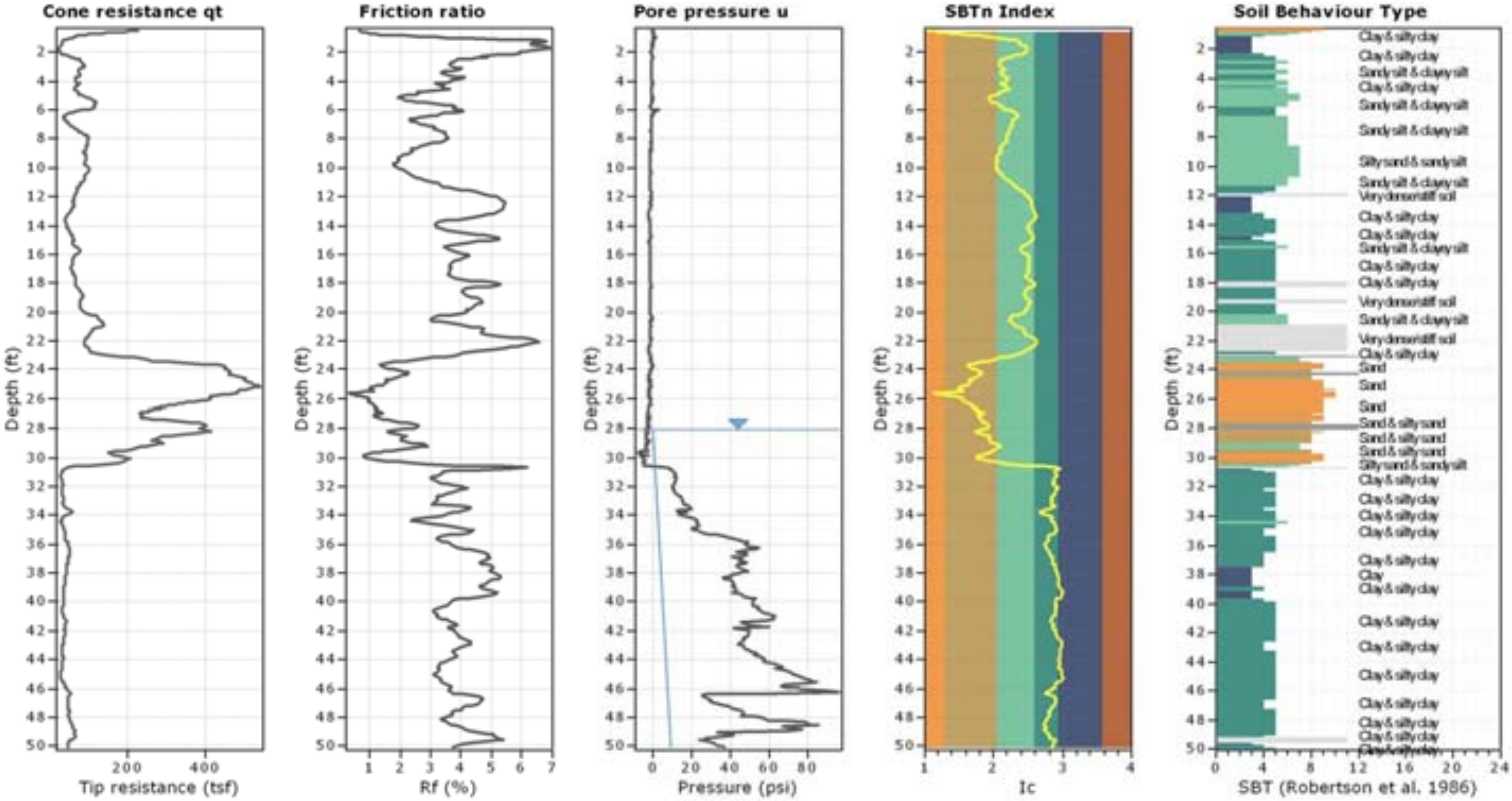


SBTn legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty clay
- 🟩 5. Silty sand to sandy silt
- 🟫 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to clayey sand
- ⬜ 9. Very stiff fine grained

CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:30 PM
Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt

Project: Uvas_Creek **CPT: CPT-08 - Total depth: 50.07 (ft)**



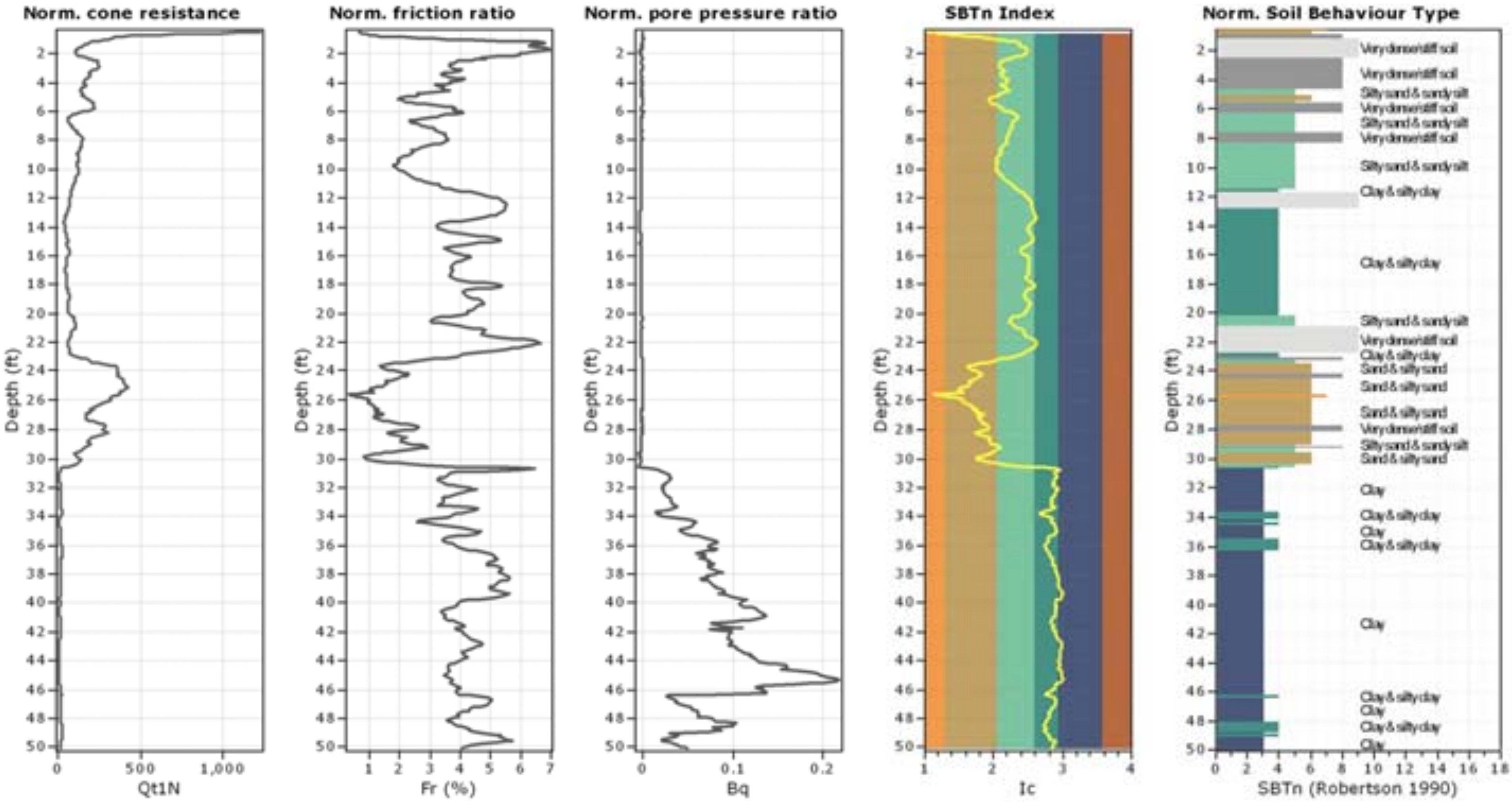
SBT legend

🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay
🟩 4. Clay & silty clay
🟩 5. Clay & silty clay
🟩 6. Sandy silt & clayey silt
🟩 7. Silty sand & sandy silt
🟫 8. Sand & silty sand
🟧 9. Sand
🟧 10. Sand
⬜ 11. Very dense/stiff soil
⬛ 12. Very dense/stiff soil

CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:33 PM
Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt

Project: Uvas_Creek

CPT: CPT-08 - Total depth: 50.07 (ft)

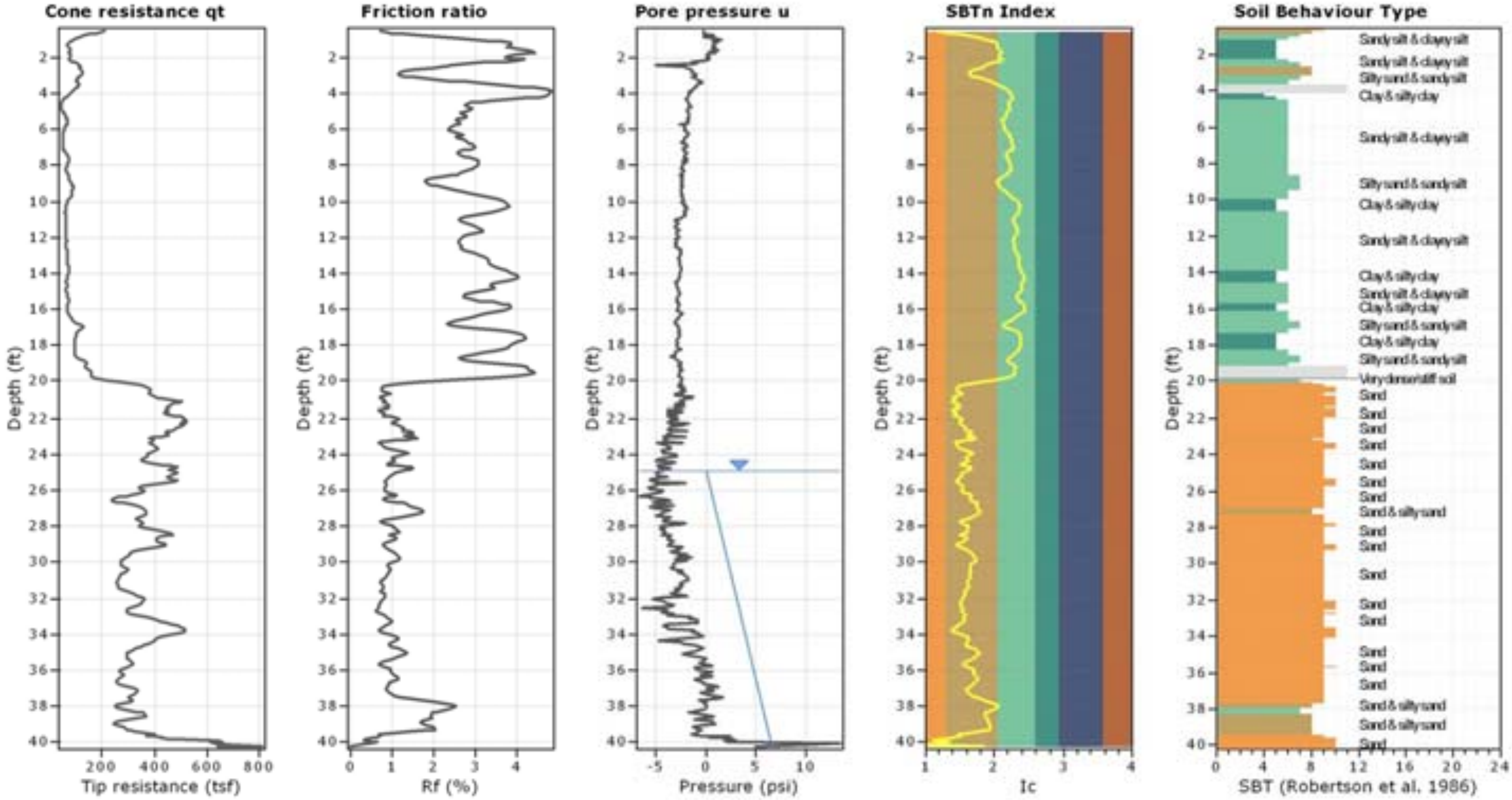


SBTn legend

🟥 1. Sensitive fine grained	4. Clayey silt to silty clay	🟧 7. Gravely sand to sand
🟫 2. Organic material	🟩 5. Silty sand to sandy silt	⬛ 8. Very stiff sand to clayey sand
🟦 3. Clay to silty clay	🟫 6. Clean sand to silty sand	⬜ 9. Very stiff fine grained

amec

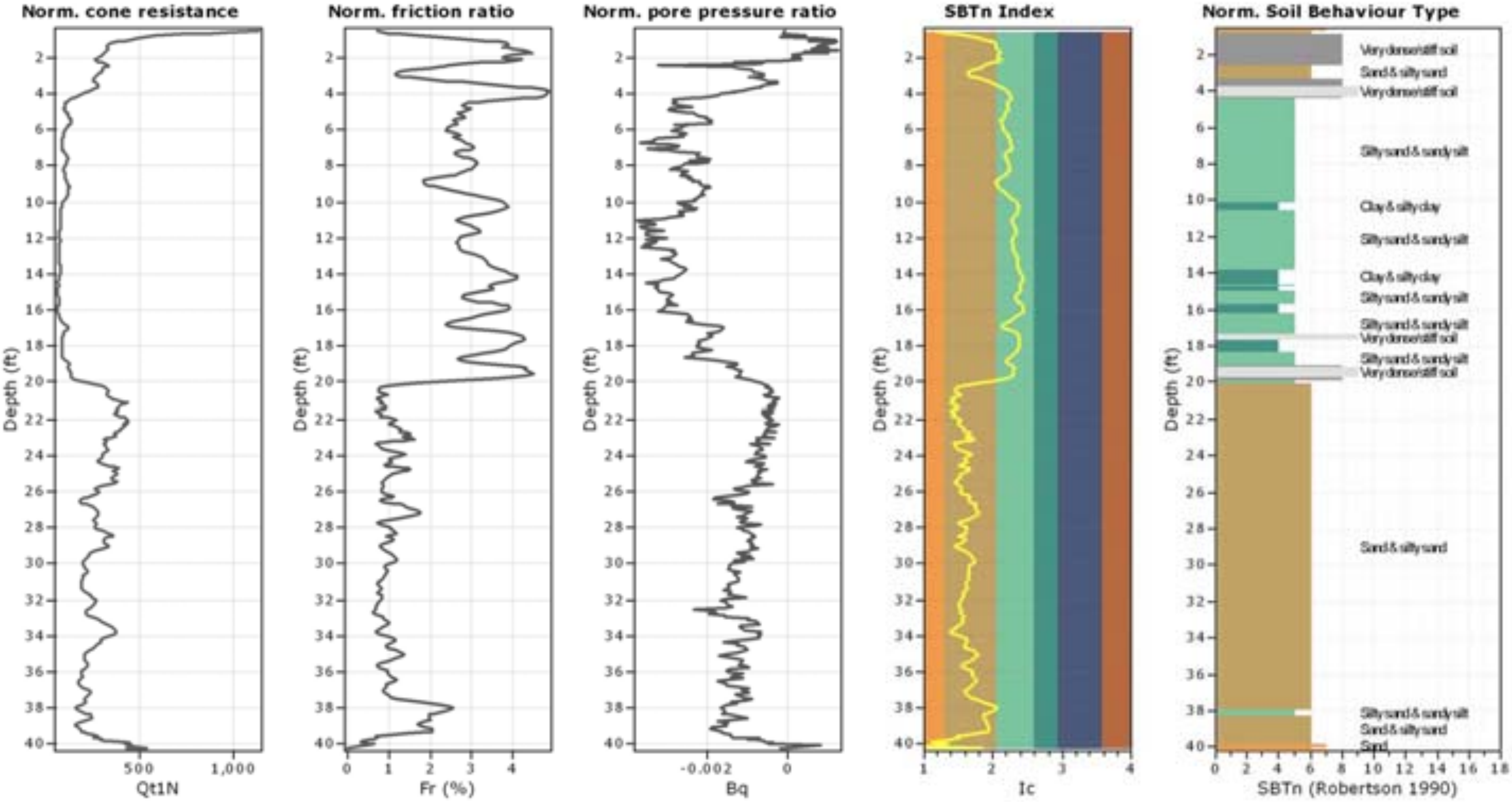
Project: Uvas_Creek **CPT: CPT-09 - Total depth: 40.22 (ft)**



SBT legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay
- 🟩 4. Clay & silty clay
- 🟩 5. Clay & silty clay
- 🟩 6. Sandy silt & clayey silt
- 🟩 7. Silty sand & sandy silt
- 🟫 8. Sand & silty sand
- 🟧 9. Sand
- 🟧 10. Sand
- ⬜ 11. Very dense/stiff soil
- ⬜ 12. Very dense/stiff soil

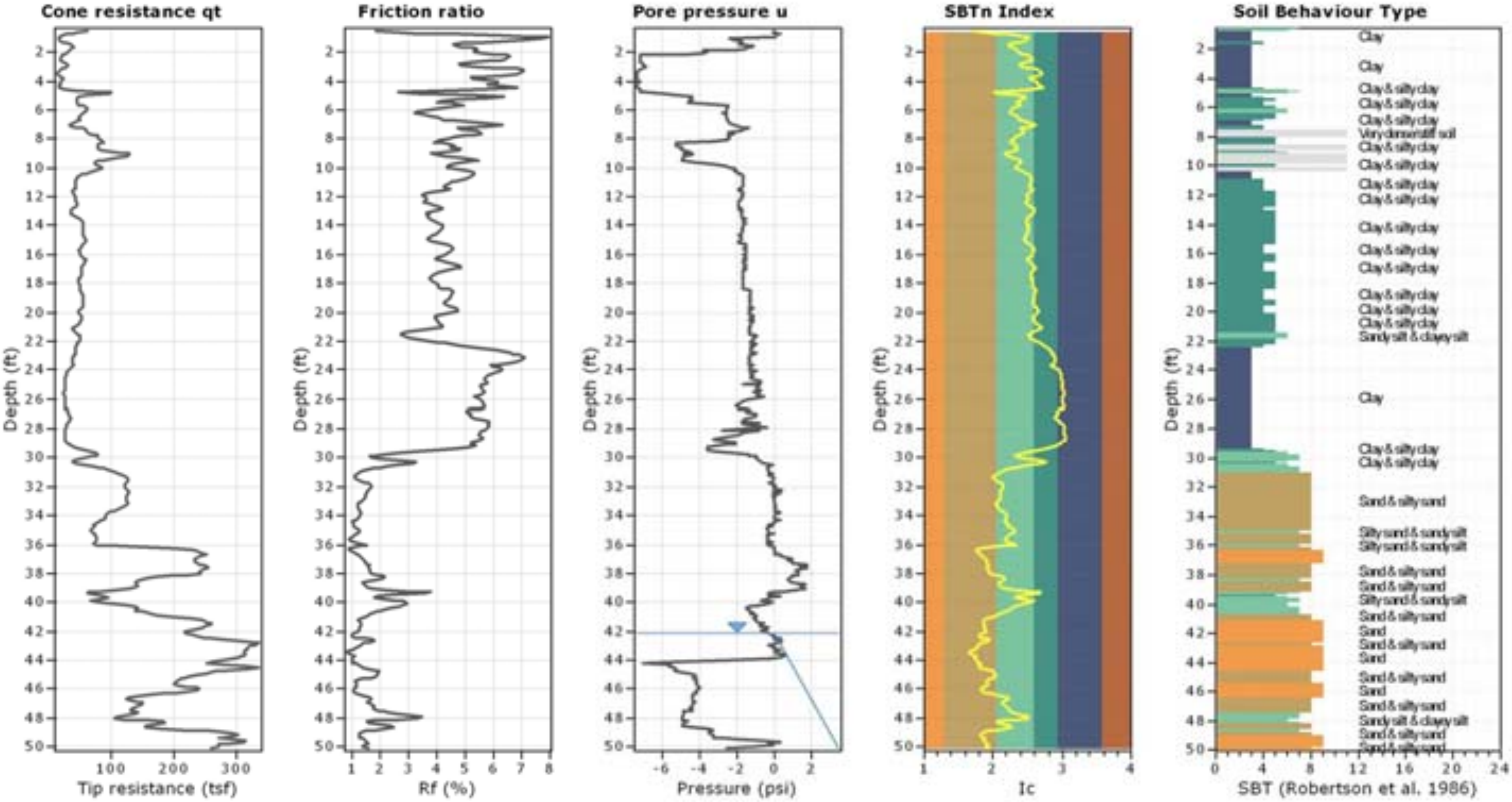
CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:35 PM
Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt



SBTn legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty clay
- 🟩 5. Silty sand to sandy silt
- 🟫 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to clayey sand
- ⬜ 9. Very stiff fine grained

Project: Uvas_Creek **CPT: CPT-10 - Total depth: 50.08 (ft)**



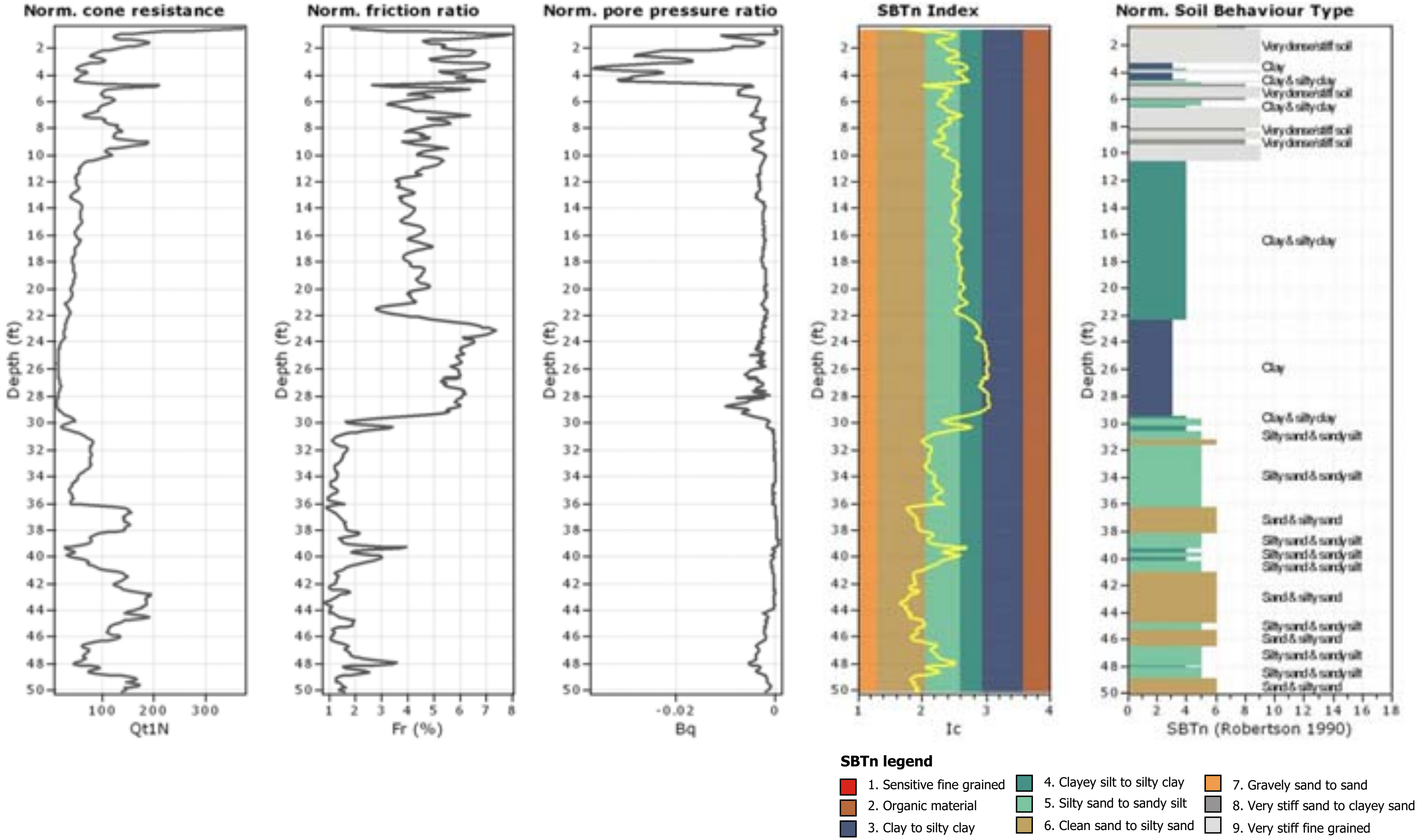
SBT legend

🟥 1. Sensitive fine grained
🟫 2. Organic material
🟦 3. Clay
🟩 4. Clay & silty clay
🟩 5. Clay & silty clay
🟩 6. Sandy silt & clayey silt
🟩 7. Silty sand & sandy silt
🟫 8. Sand & silty sand
🟧 9. Sand
🟧 10. Sand
⬜ 11. Very dense/stiff soil
⬜ 12. Very dense/stiff soil

CPeT-IT v.1.6.0.68 - CPTU data presentation & interpretation software - Report created on: 5/1/2009, 1:04:37 PM
Project file: I:\Project\13000\13815.001\5000 INVESTIGATION, Recon, Field, Lab\Uvas_Creek_CPTs\Uvas_Creek_CPTs.cpt

Project: Uvas_Creek

CPT: CPT-10 - Total depth: 50.08 (ft)



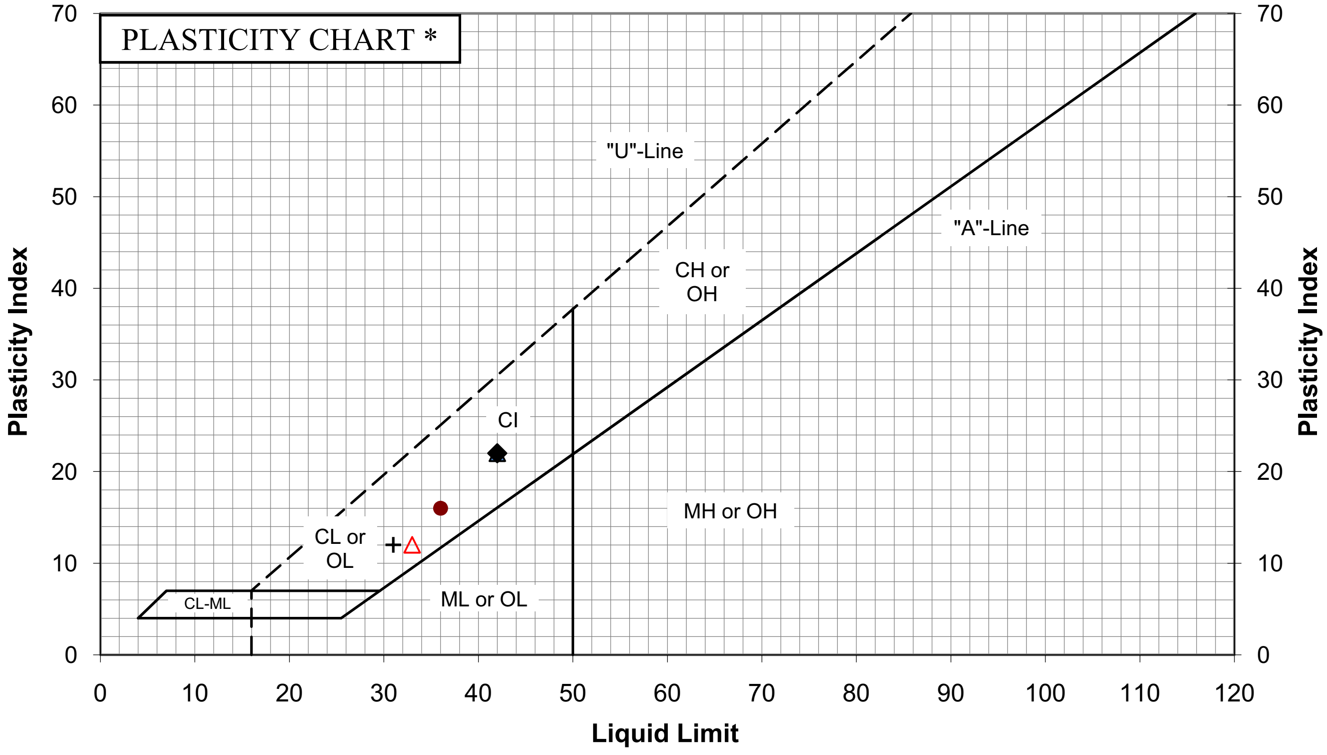
APPENDIX E

Geotechnical Laboratory Test Results

ATTERBERG LIMITS TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek Levee FEMA Recertification	PROJECT No.	2227 E

DATE OF TEST	12/16/2008	12/17/2008	12/17/2008	12/17/2008	12/17/2008
KEY SYMBOL	◆	▲	●	+	△
DRILL HOLE No.	B-1	B-1	B-1	B-1	B-3
DEPTH (ft)	3	6.5	15.5	25.5	5.5
NATURAL WATER CONTENT (%)	13	17	17	17	15
% Retained No. 40 SIEVE (Est.)	25	10	1	0	1
% PASSING No. 200 SIEVE	51	NA	81	54	79
LIQUID LIMIT	42	42	36	31	33
PLASTIC LIMIT	20	20	20	19	21
PLASTICITY INDEX	22	22	16	12	12
CLASSIFICATION SYMBOL	CL	CL	CL	CL	CL



PACIFIC GEOTECHNICAL ENGINEERING

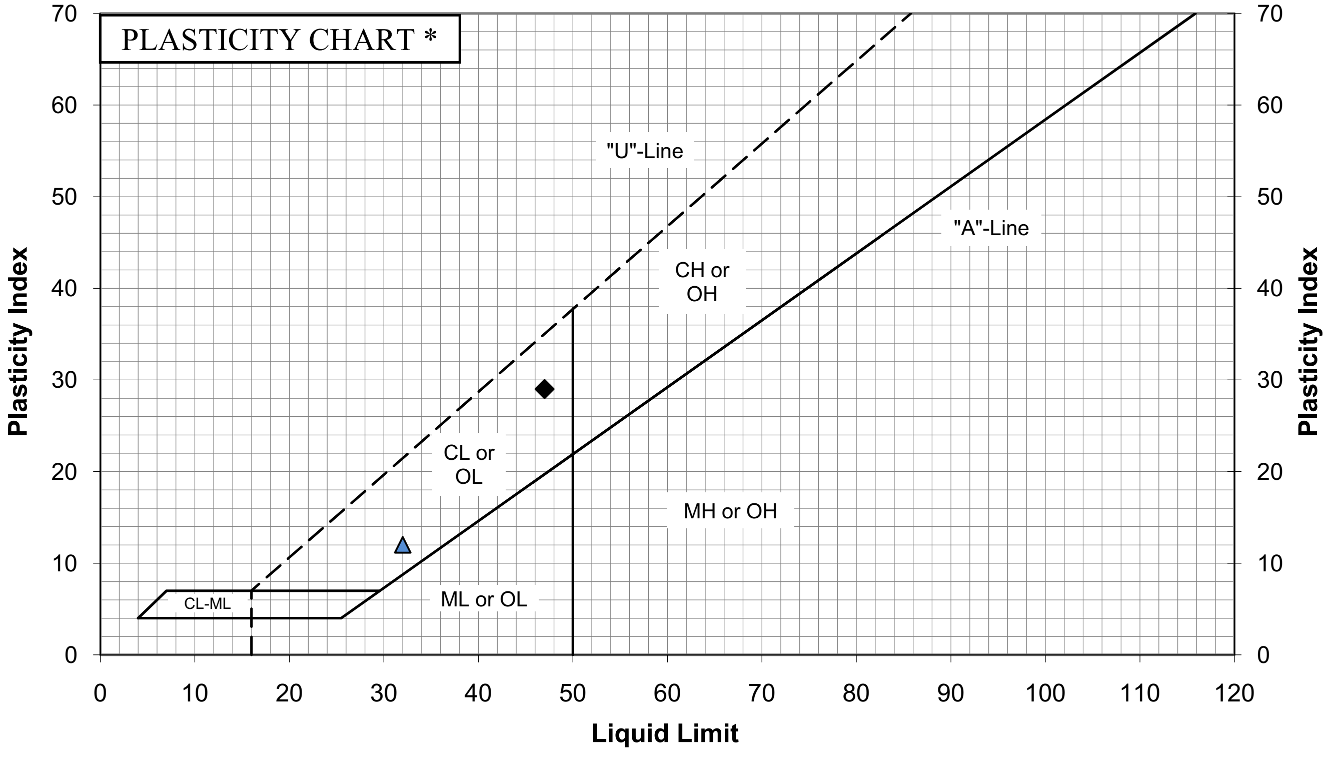
Figure B-1

Rev030106

ATTERBERG LIMITS TEST RESULTS

PROJECT NAME	**SCVWD Uvas Creek Levee FEMA Recertification**	PROJECT No. 2227 E

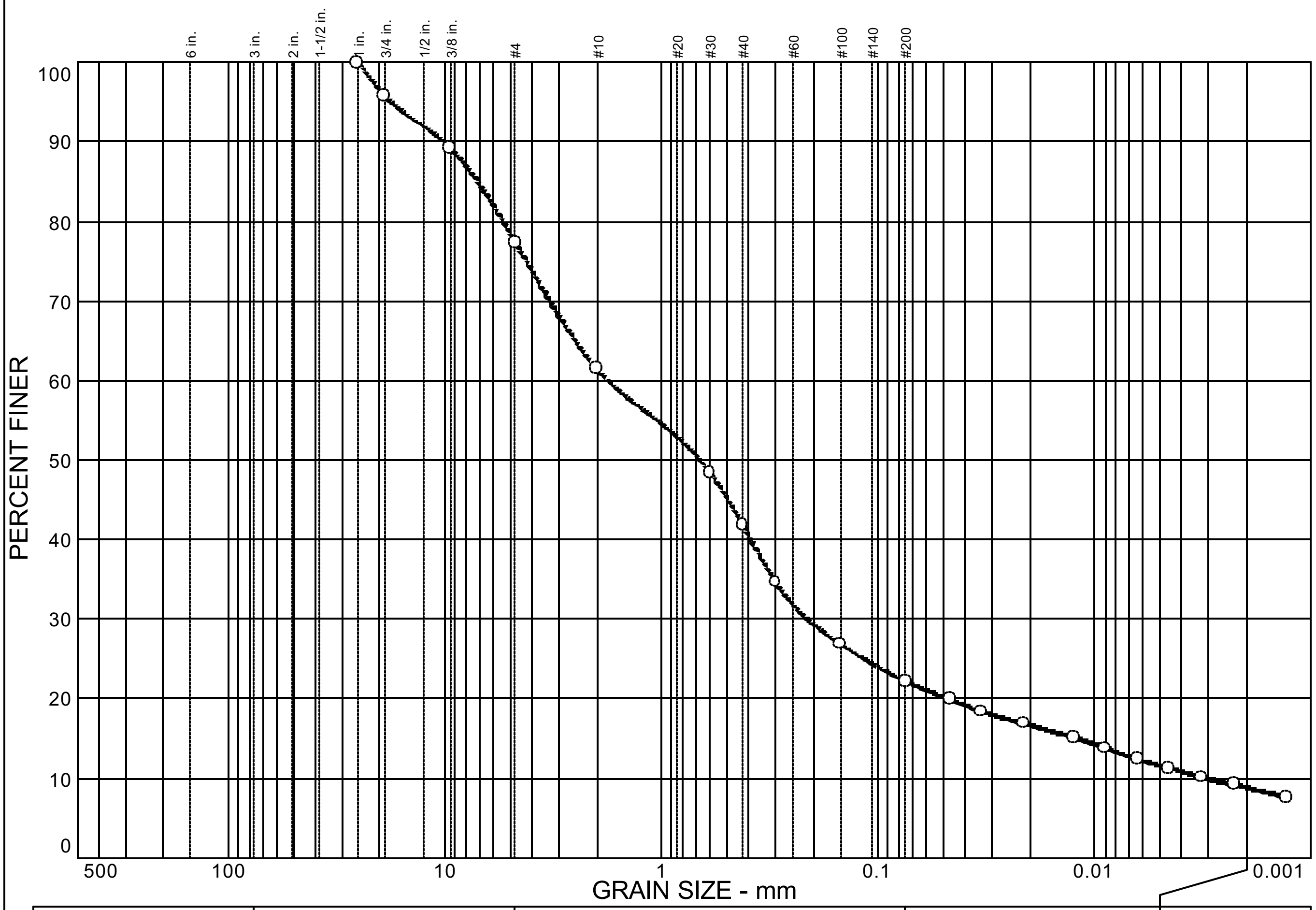
DATE OF TEST	12/16/2008	12/17/2008			
KEY SYMBOL	◆	▲			
DRILL HOLE No.	B-4	B-4			
DEPTH (ft)	4.5	11			
NATURAL WATER CONTENT (%)	14	12			
% Retained No. 40 SIEVE (Est.)	15	15			
% PASSING No. 200 SIEVE	66	68			
LIQUID LIMIT	47	32			
PLASTIC LIMIT	18	20			
PLASTICITY INDEX	29	12			
CLASSIFICATION SYMBOL	CL	CL			



PACIFIC GEOTECHNICAL ENGINEERING | **Figure B-2**

Rev030106

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	22.7	55.1	13.4	8.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 in.	100.0		
3/4 in.	95.8		
3/8 in.	89.3		
#4	77.3		
#10	61.5		
#30	48.4		
#40	41.8		
#50	34.7		
#100	26.9		
#200	22.2		
0.0469 mm.	19.9		
0.0335 mm.	18.4		
0.0214 mm.	16.9		
0.0125 mm.	15.1		
0.0090 mm.	13.8		
0.0064 mm.	12.4		
0.0046 mm.	11.3		
0.0032 mm.	10.1		
0.0023 mm.	9.2		
0.0013 mm.	7.6		

* (no specification provided)

Soil Description

Reddish Brown Clayey SAND w/ Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 7.11 D_{60}= 1.77 D_{50}= 0.667
D_{30}= 0.213 D_{15}= 0.0122 D_{10}= 0.0031
C_u= 571.61 C_c= 8.27

Classification

USCS= AASHTO=

Remarks

Sample No.: **Source of Sample:** B-1 **Date:**
Location: **Elev./Depth:** 40.5-41.5'

COOPER TESTING LABORATORY

Client: Pacific Geotechnical Engineering
Project: Uvas Creek Levee Recertification - 2227E

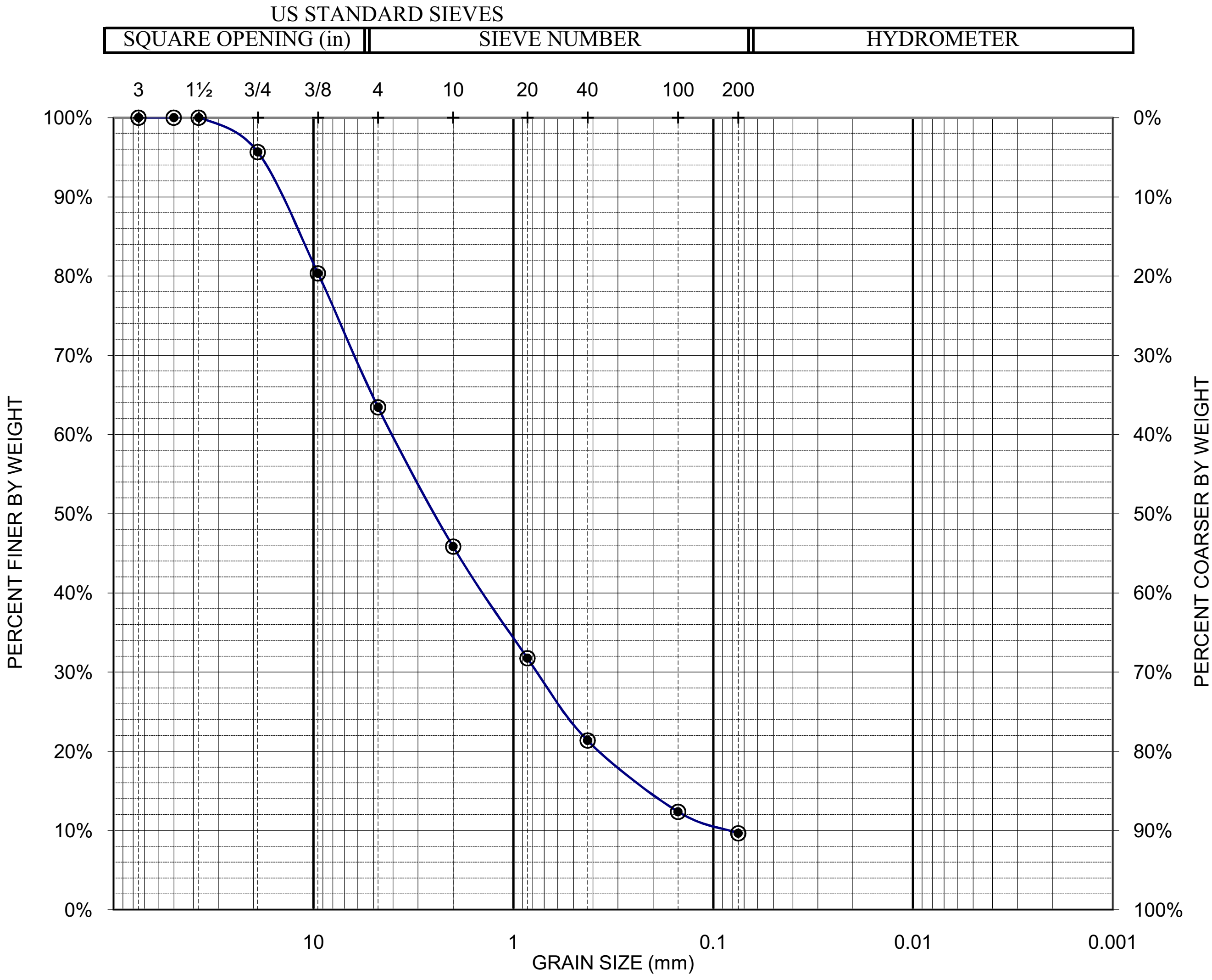
Project No: 226-175 **Figure** B-3

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification			**PROJECT No.**	2227 E
DRILL HOLE No. B-1	**DEPTH (ft)** 45.5-46.5	**SAMPLE**	N/A	**DATE OF TEST**	12/8/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: WELL GRADED SAND with GRAVEL and SILT: Dark brown (10YR 3/3), wet



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	36.6%		53.8%			9.6%

REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure B-4

RevOct20070

GRAIN SIZE TEST RESULTS

PROJECT NAME SCVWD Uvas Creek FEMA Recertification

PROJECT No. 2227 E

DRILL HOLE No. B-1

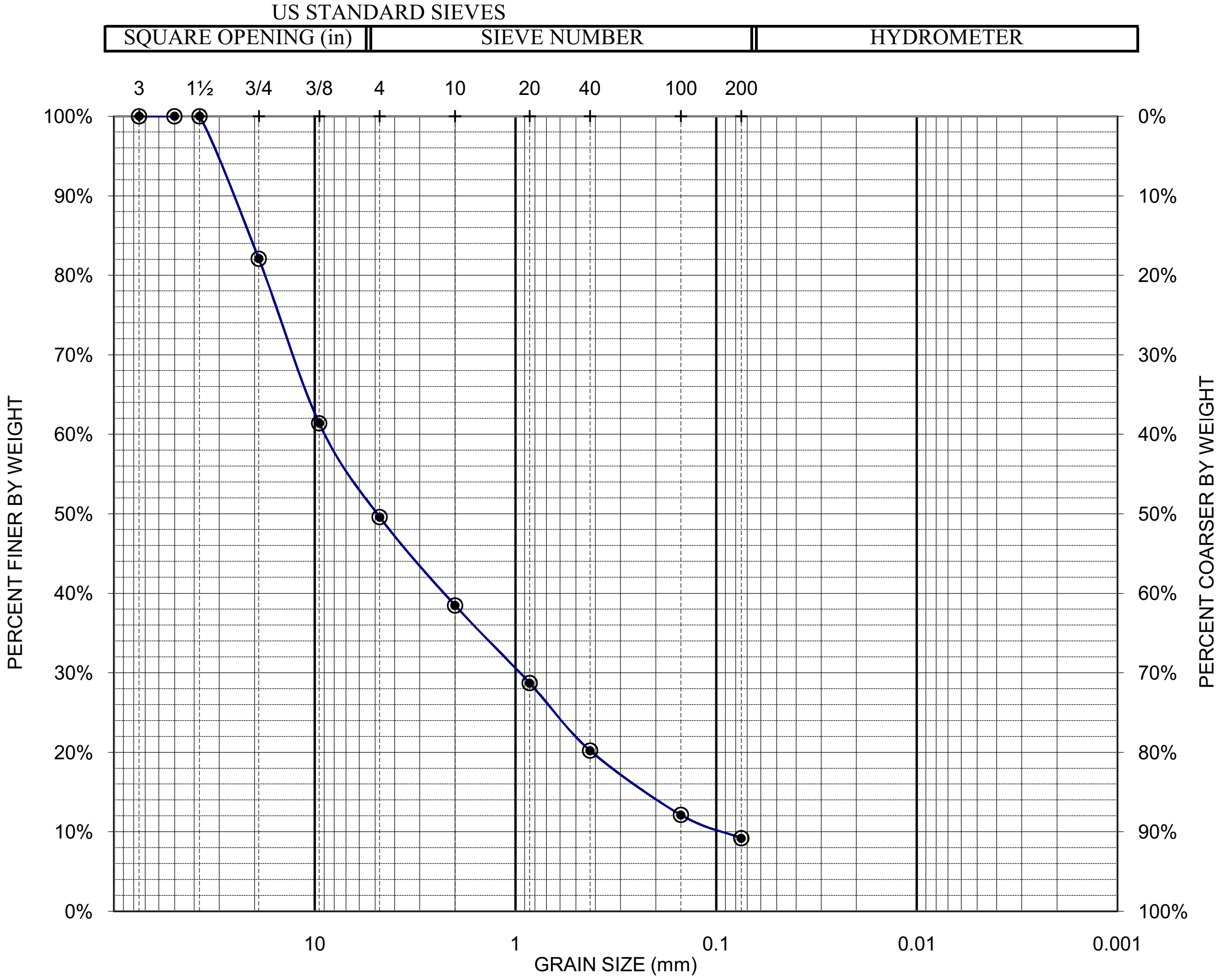
DEPTH (ft) 60.5-61.5

SAMPLE N/A

DATE OF TEST 12/5/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: WELL GRADED GRAVEL with SAND and SILT: Brown (10YR 3/3), wet



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	50.4%		40.4%			9.2%

REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure **B-5**

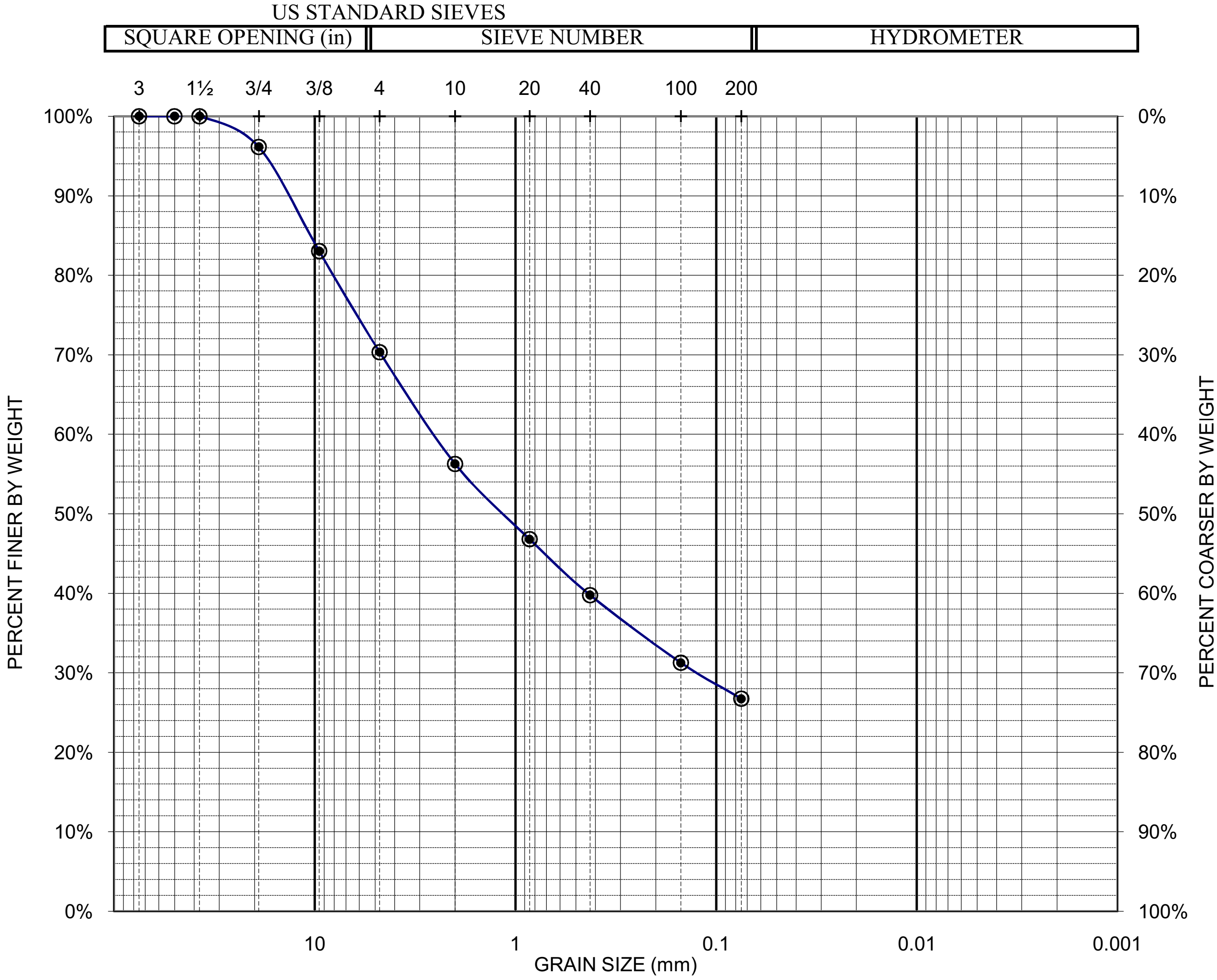
RevOct20070

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification					**PROJECT No.**	2227 E
DRILL HOLE No.	B-2	**DEPTH (ft)**	2.0	**SAMPLE**	N/A	**DATE OF TEST**	12/11/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: CLAYEY SAND with GRAVEL: Brown (10YR 4/3), moist



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	29.7%		43.6%			26.7%

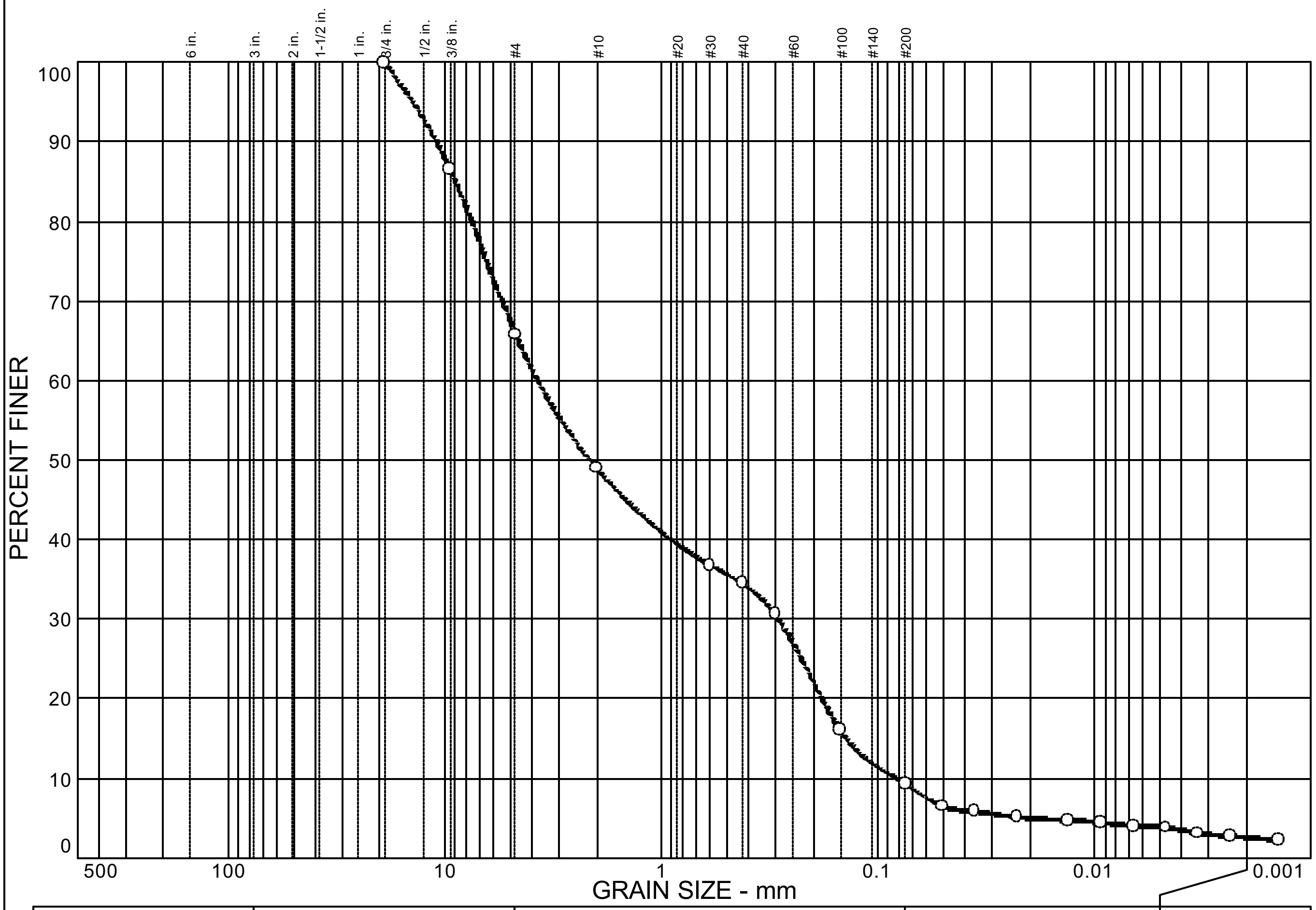
REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure **B-6**

RevOct20070

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	34.2	56.5	6.8	2.5

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	86.5		
#4	65.8		
#10	49.0		
#30	36.8		
#40	34.5		
#50	30.6		
#100	16.0		
#200	9.3		
0.0507 mm.	6.5		
0.0361 mm.	5.8		
0.0229 mm.	5.1		
0.0132 mm.	4.7		
0.0094 mm.	4.4		
0.0067 mm.	4.0		
0.0047 mm.	3.8		
0.0033 mm.	3.1		
0.0024 mm.	2.7		
0.0014 mm.	2.2		

* (no specification provided)

Soil Description

Brown Poorly Graded SAND w/ Silt & Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 9.01 D_{60}= 3.76 D_{50}= 2.15

D_{30}= 0.290 D_{15}= 0.141 D_{10}= 0.0826

C_u= 45.47 C_c= 0.27

Classification

USCS= AASHTO=

Remarks

Sample No.: **Source of Sample:** B-2 **Date:**

Location: **Elev./Depth:** 9.5'

COOPER TESTING LABORATORY

Client: Pacific Geotechnical Engineering

Project: Uvas Creek Levee Recertification - 2227E

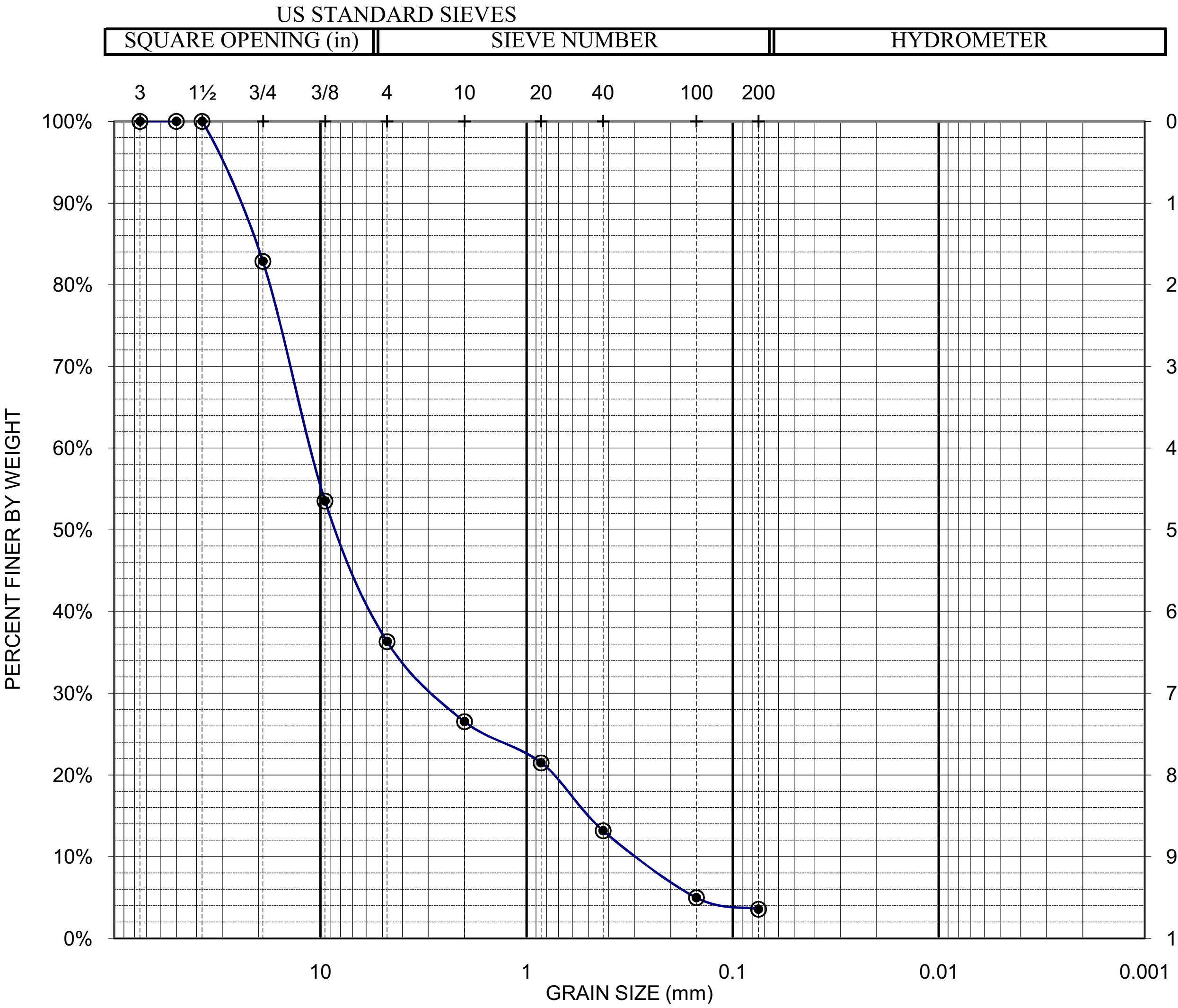
Project No: 226-175 **Figure** B-7

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification					**PROJECT No.**	2227 E
DRILL HOLE No.	B-2	**DEPTH (ft)**	16.0	**SAMPLE**	N/A	**DATE OF TEST**	12/15/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: WELL GRADED GRAVEL with SAND: Dark brown (10YR 3/2), dry



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	63.7%		32.8%			3.6%

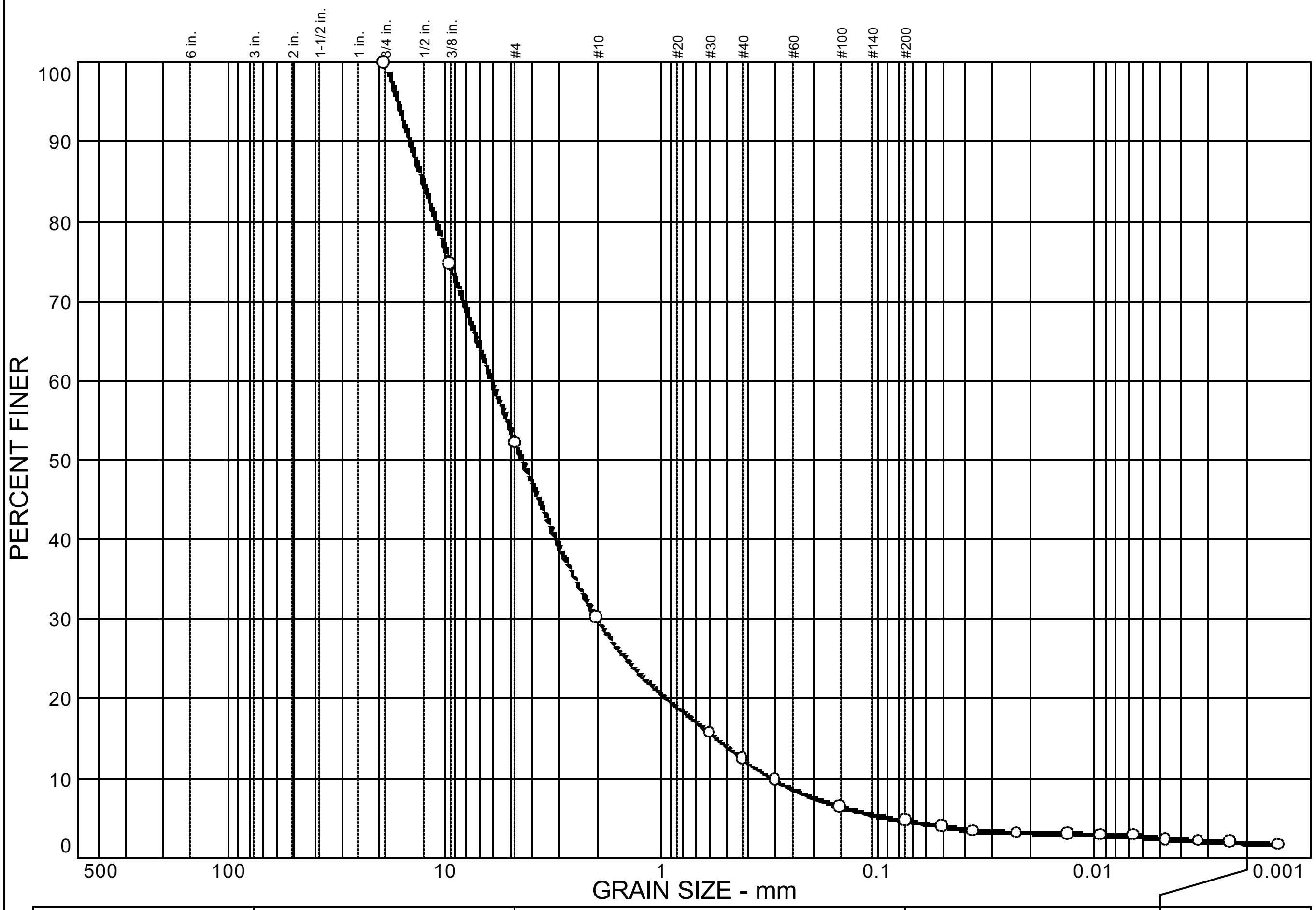
REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure **B-8**

RevOct20070

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	47.8	47.6	2.8	1.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	74.7		
#4	52.2		
#10	30.1		
#30	15.7		
#40	12.4		
#50	9.7		
#100	6.4		
#200	4.6		
0.0508 mm.	3.9		
0.0362 mm.	3.3		
0.0229 mm.	3.1		
0.0132 mm.	3.0		
0.0094 mm.	2.8		
0.0066 mm.	2.8		
0.0047 mm.	2.3		
0.0033 mm.	2.1		
0.0024 mm.	1.9		
0.0014 mm.	1.6		

* (no specification provided)

Soil Description

Brown Well-Graded GRAVEL w/ Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 12.7 D_{60}= 6.12 D_{50}= 4.41
D_{30}= 1.99 D_{15}= 0.558 D_{10}= 0.314
C_u= 19.50 C_c= 2.06

Classification

USCS= AASHTO=

Remarks

Sample No.: **Source of Sample:** B-2 **Date:**
Location: **Elev./Depth:** 20.5-21.5'

COOPER TESTING LABORATORY

Client: Pacific Geotechnical Engineering
Project: Uvas Creek Levee Recertification - 2227E

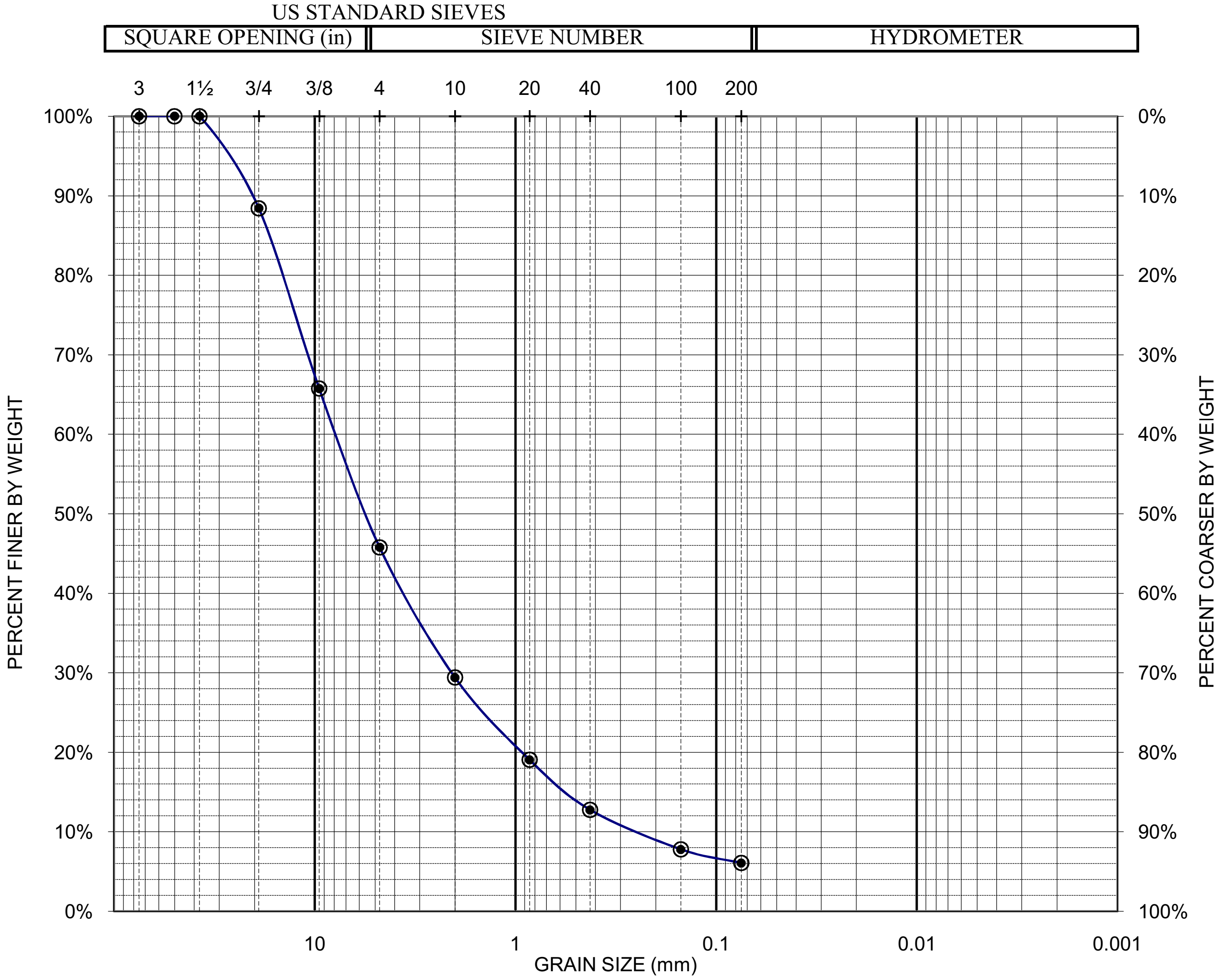
Project No: 226-175 **Figure** B-9

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification					**PROJECT No.**	2227 E
DRILL HOLE No.	B-2	**DEPTH (ft)**	35.5-36.5	**SAMPLE**	N/A	**DATE OF TEST**	12/11/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: WELL GRADED GRAVEL with SAND and SILT: Dark brown (10YR 3/3), wet



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	54.2%		39.7%			6.1%

REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure B-10

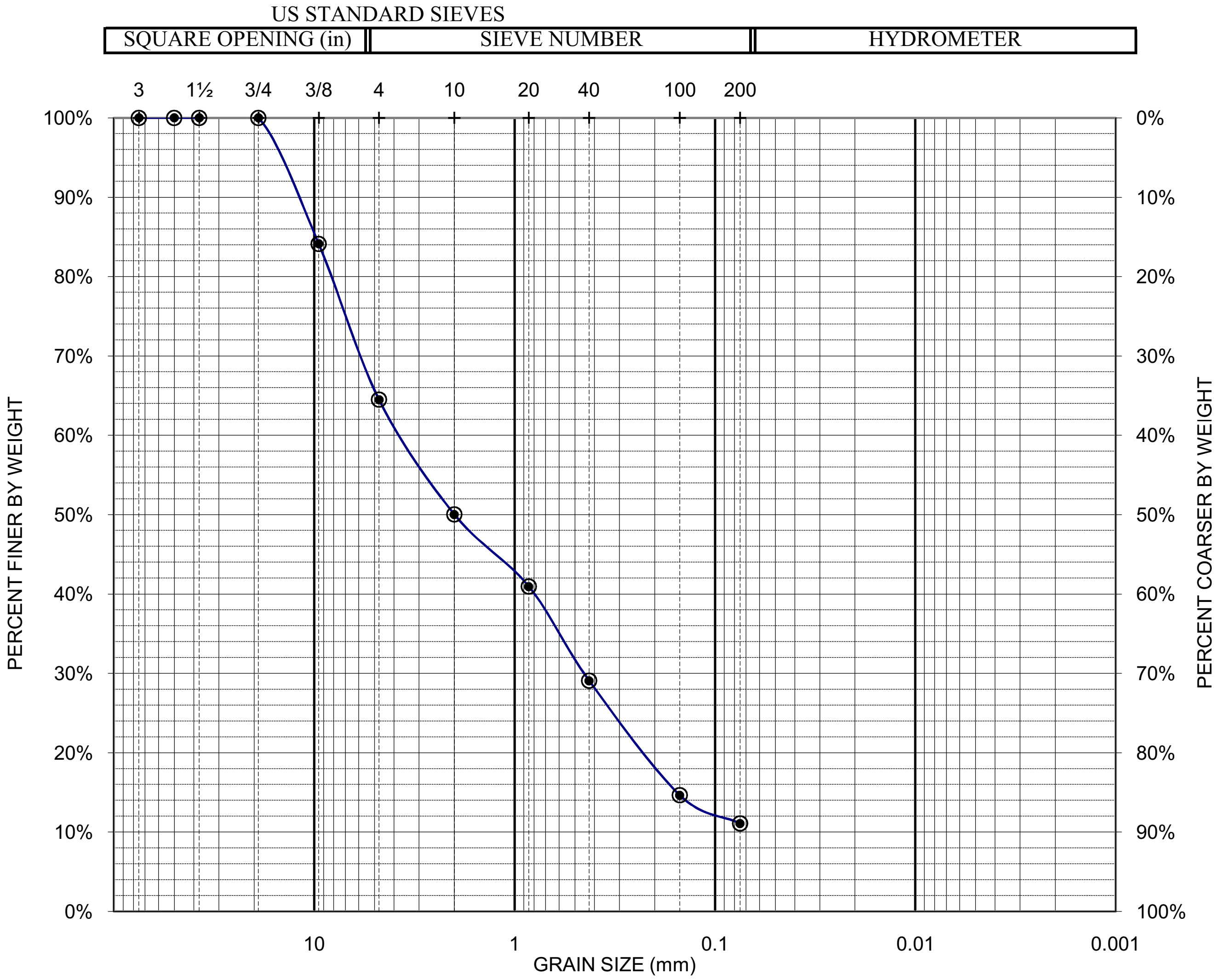
GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification	**PROJECT No.**	2227 E

DRILL HOLE No.	B-2	**DEPTH (ft)**	45.5-46.5	**SAMPLE**	N/A	**DATE OF TEST**	12/11/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: POORLY GRADED SAND with GRAVEL and SILT: Dark brown (10YR 3/3), wet



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	35.5%		53.4%			11.1%

REMARKS:

RevOct20070

PACIFIC GEOTECHNICAL ENGINEERING

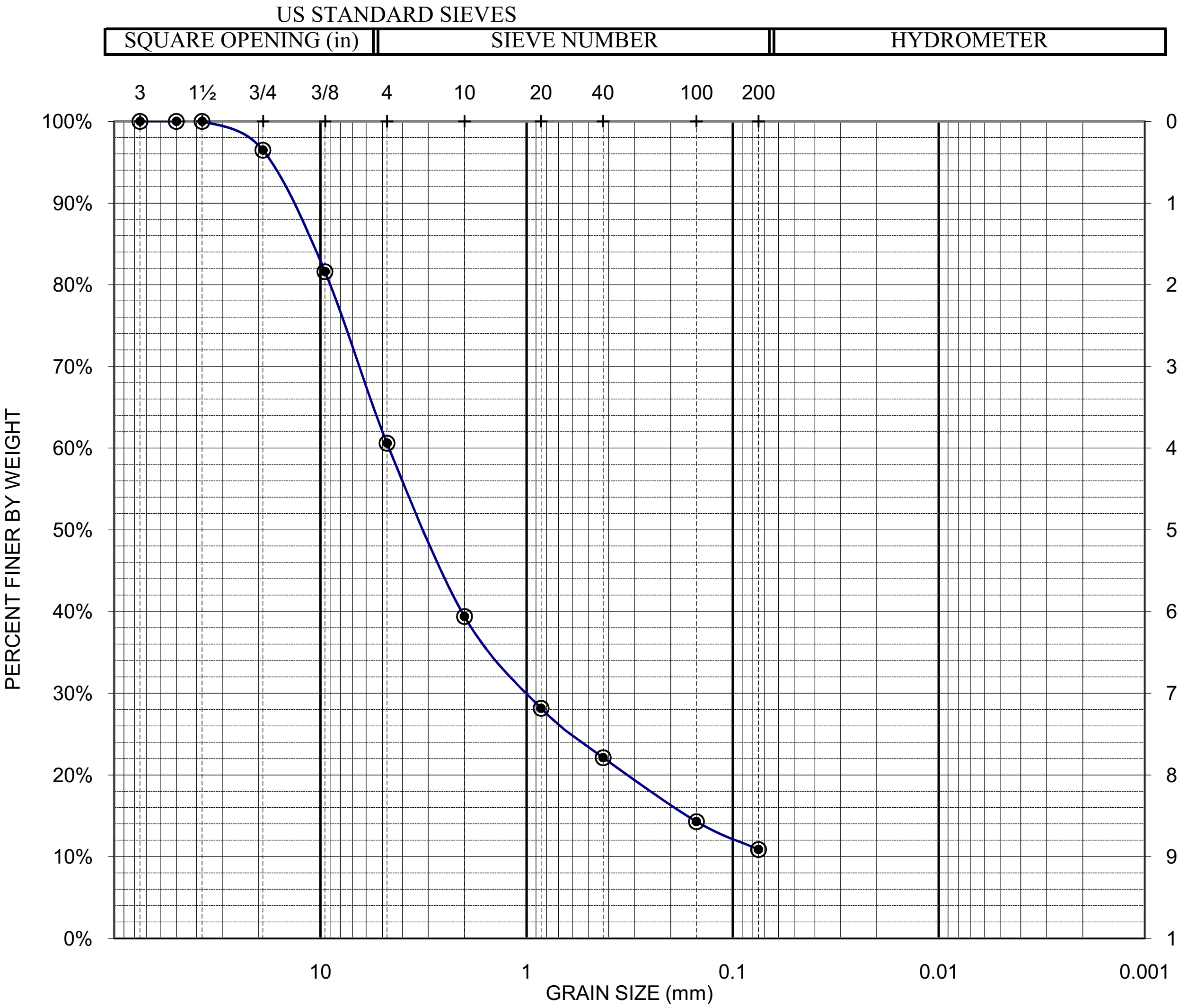
Figure B-11

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification			**PROJECT No.**	2227 E
DRILL HOLE No. B-2	**DEPTH (ft)** 65.5-66.5	**SAMPLE** N/A		**DATE OF TEST**	12/5/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: POORLY GRADED SAND with GRAVEL and SILT: Dark brown (10YR 3/3), wet



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	39.4%		49.7%			10.9%

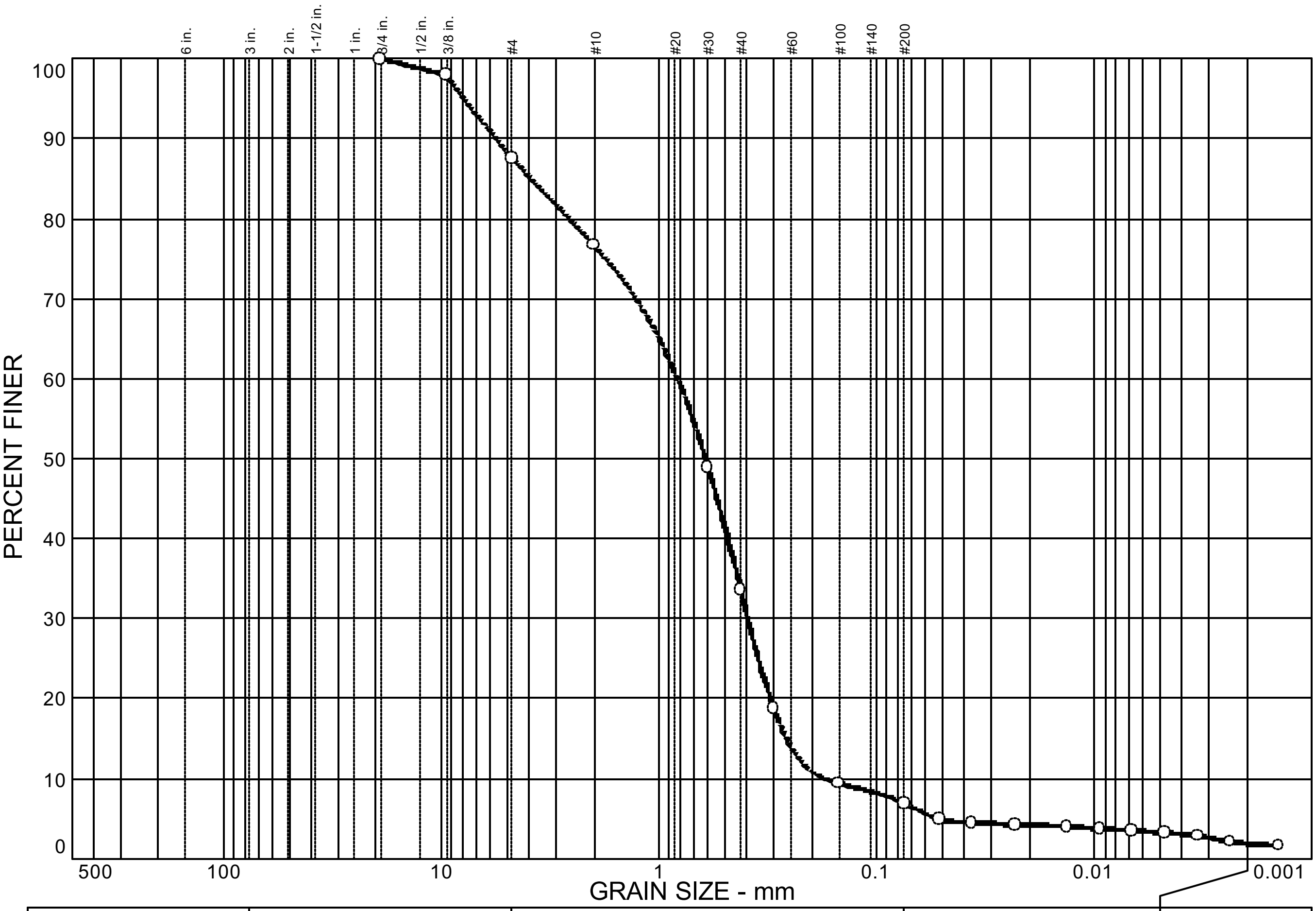
REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure B-12

RevOct20070

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	12.4	80.7	5.1	1.8

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4 in.	100.0		
3/8 in.	98.0		
#4	87.6		
#10	76.7		
#30	48.9		
#40	33.5		
#50	18.7		
#100	9.4		
#200	6.9		
0.0518 mm.	4.9		
0.0367 mm.	4.5		
0.0233 mm.	4.2		
0.0134 mm.	4.0		
0.0095 mm.	3.7		
0.0067 mm.	3.5		
0.0048 mm.	3.2		
0.0034 mm.	2.8		
0.0024 mm.	2.1		
0.0014 mm.	1.6		

* (no specification provided)

Soil Description

Brown Poorly Graded SAND w/ Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 3.89 D_{60}= 0.831 D_{50}= 0.617
D_{30}= 0.394 D_{15}= 0.263 D_{10}= 0.175
C_u= 4.74 C_c= 1.07

Classification

USCS= AASHTO=

Remarks

Sample No.: **Source of Sample:** B-3 **Date:**
Location: **Elev./Depth:** 16'

COOPER TESTING LABORATORY

Client: Pacific Geotechnical Engineering
Project: Uvas Creek Levee Recertification - 2227E

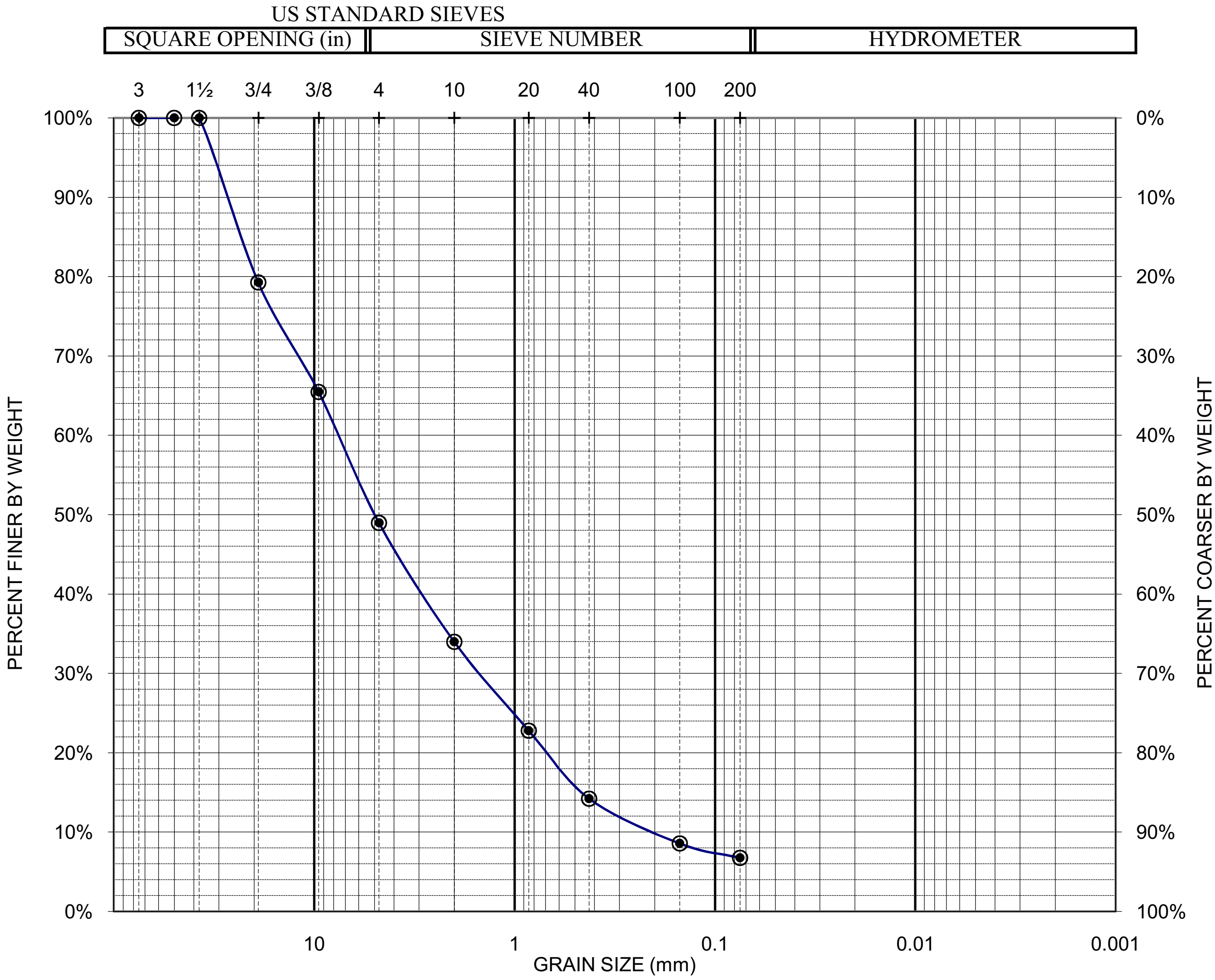
Project No: 226-175 **Figure** B-13

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification					**PROJECT No.**	2227 E
DRILL HOLE No. B-3		**DEPTH (ft)** 26.0		**SAMPLE** N/A		**DATE OF TEST**	12/15/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: WELL GRADED GRAVEL with SAND and SILT: Dark brown (10YR 3/3), moist to wet



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	51.0%		42.2%			6.8%

REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure **B-14**

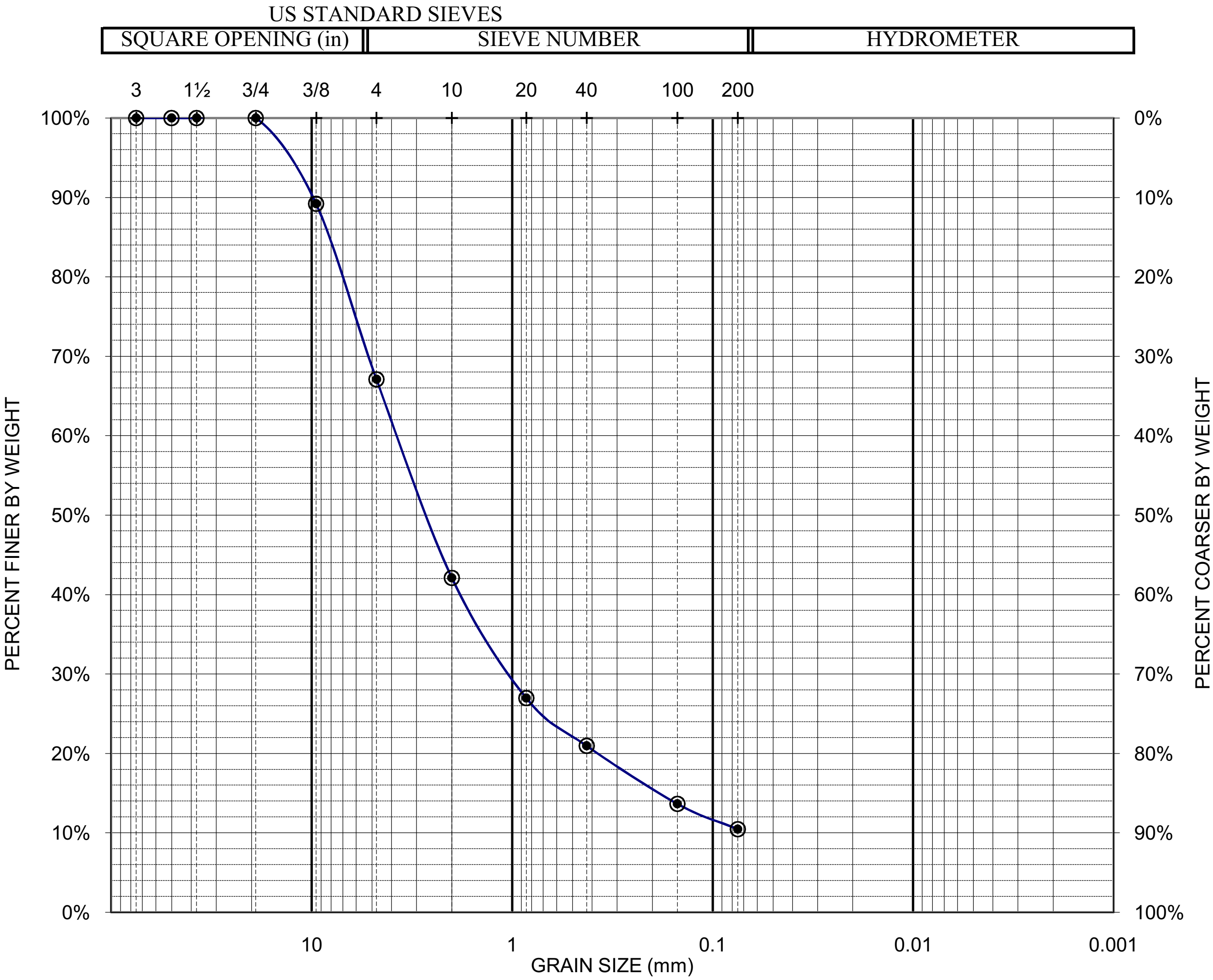
RevOct20070

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification					**PROJECT No.**	2227 E
DRILL HOLE No.	B-3	**DEPTH (ft)**	35.5-36.5	**SAMPLE**	N/A	**DATE OF TEST**	12/11/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: POORLY GRADED SAND with GRAVEL and SILT: Dark brown (10YR 3/3), moist to wet



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	32.9%		56.6%			10.5%

REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure **B-15**

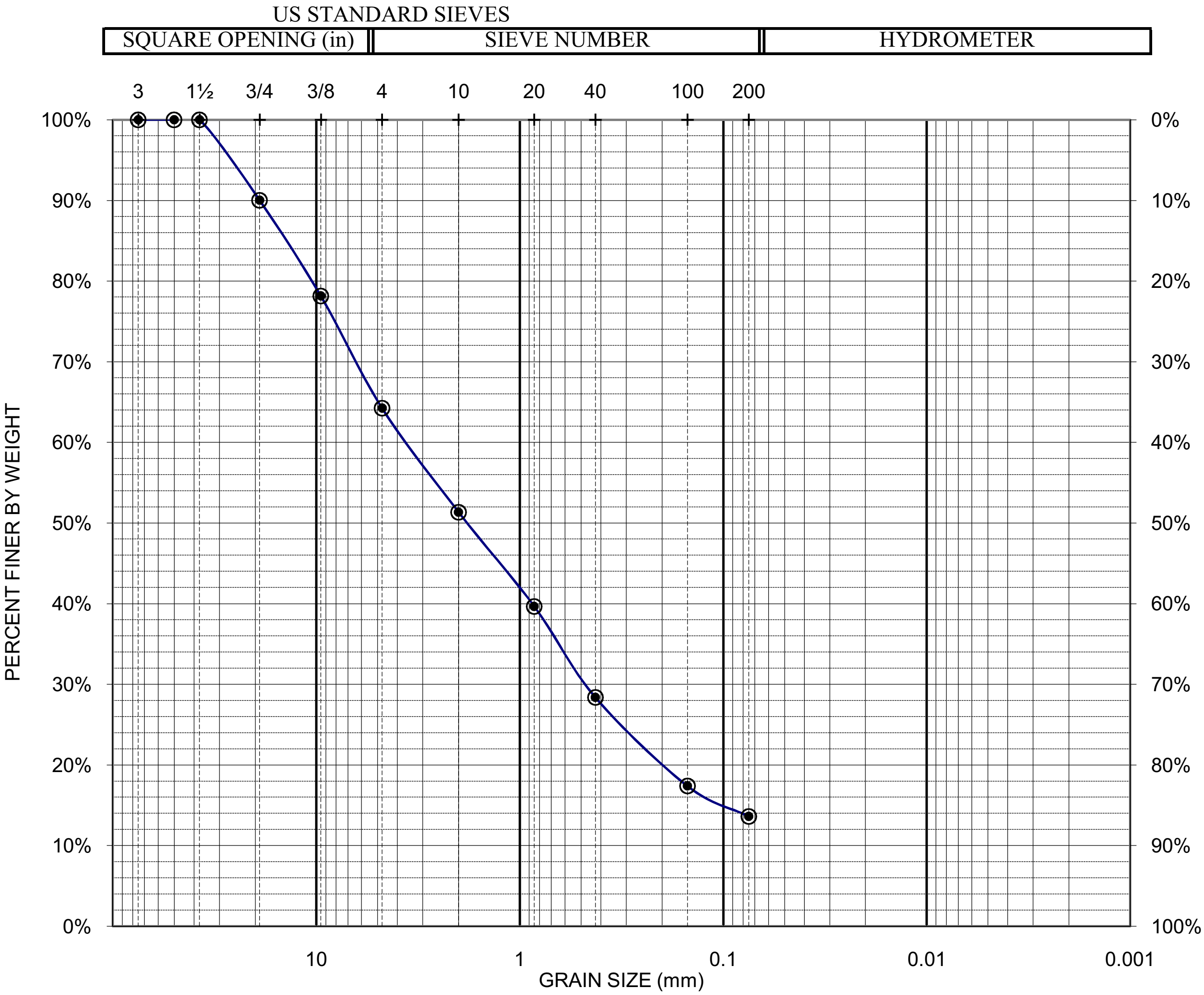
RevOct20070

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek FEMA Recertification					**PROJECT No.**	2227 E
DRILL HOLE No.	B-3	**DEPTH (ft)**	50.5-51.5	**SAMPLE**	N/A	**DATE OF TEST**	12/5/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: CLAYEY SAND with GRAVEL: Brown (10YR 4/3), moist to wet



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	35.8%		50.6%			13.6%

REMARKS:

PACIFIC GEOTECHNICAL ENGINEERING

Figure B-16

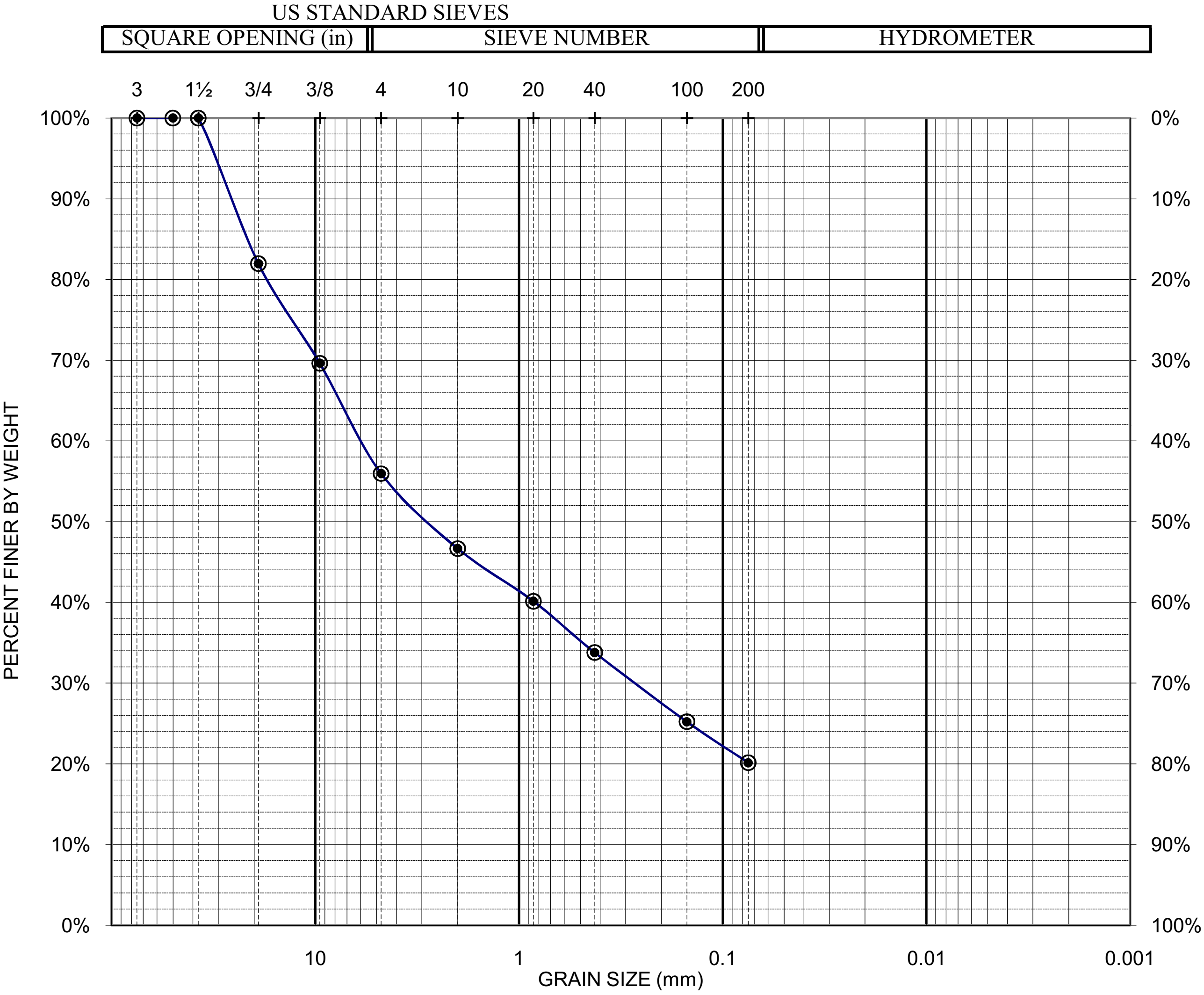
RevOct20070

GRAIN SIZE TEST RESULTS

PROJECT NAME	SCVWD Uvas Creek Levee FEMA Recertification				**PROJECT No.**	2227 E
DRILL HOLE No.	B-3	**DEPTH (ft)** 60.5-61.0	**SAMPLE**	N/A	**DATE OF TEST**	12/23/2008

SOURCE/QUARRY: On site

DESCRIPTION OF SOIL: CLAYEY GRAVEL with SAND: Brown (10YR 3/2), moist



	COARSE	FINE	COARSE	MEDIUM	FINE	
COBBLES	GRAVEL		SAND			SILT & CLAY
	44.1%		35.8%			20.1%

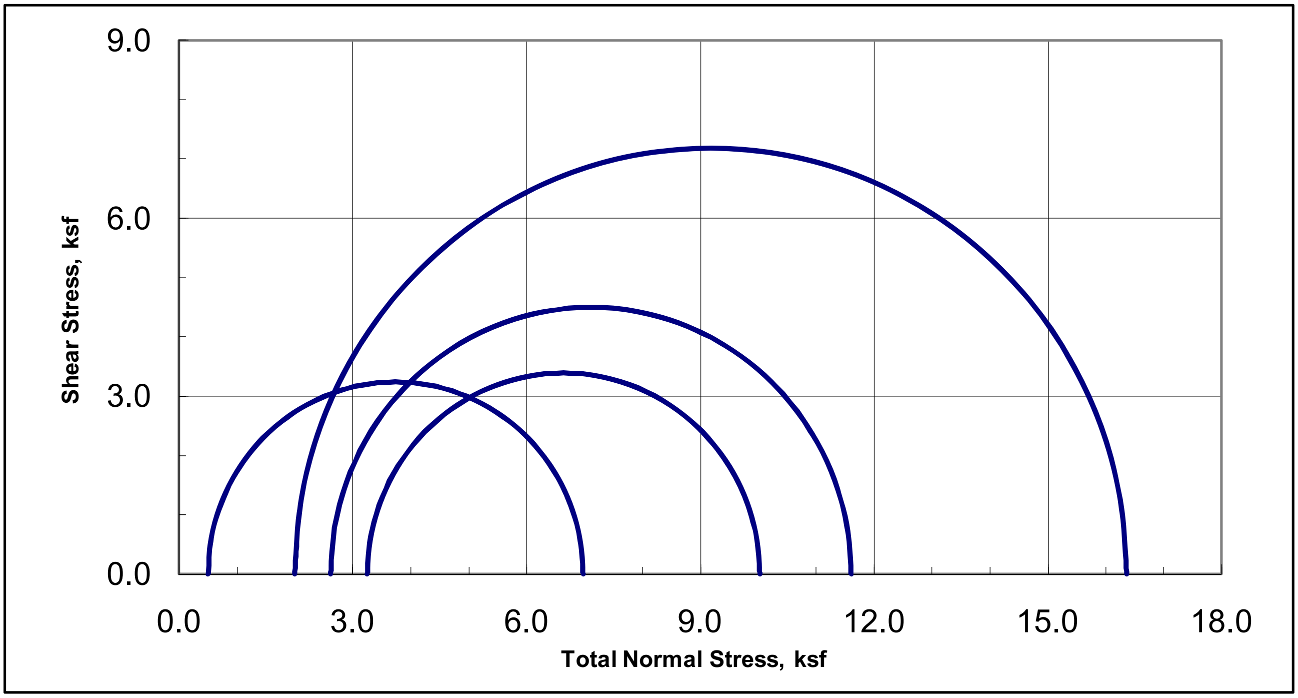
REMARKS:

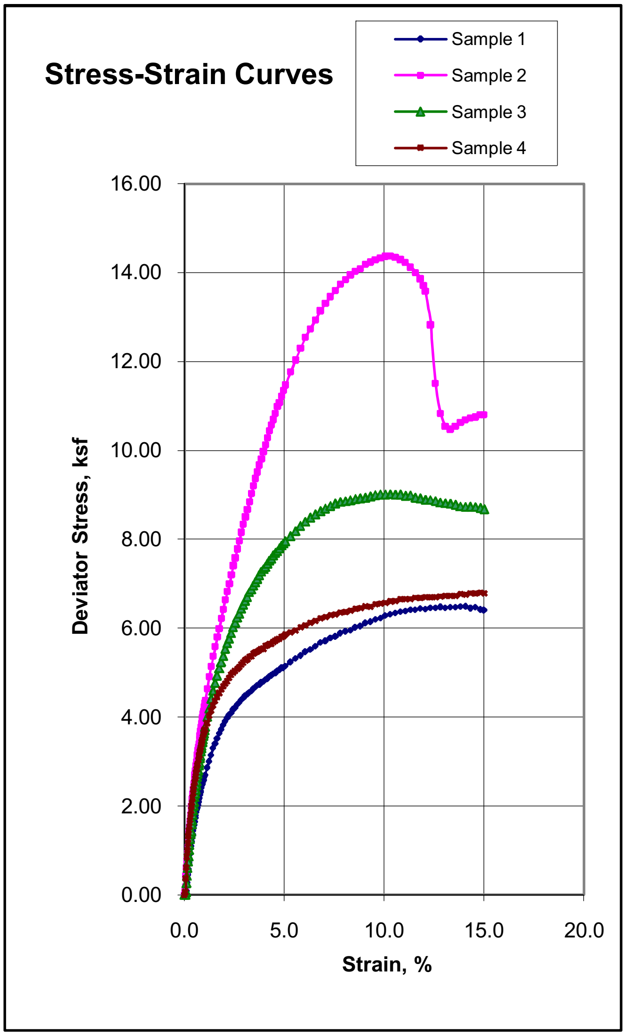
PACIFIC GEOTECHNICAL ENGINEERING

Figure B-17

COOPER

Unconsolidated-Undrained Triaxial Test
ASTM D-2850





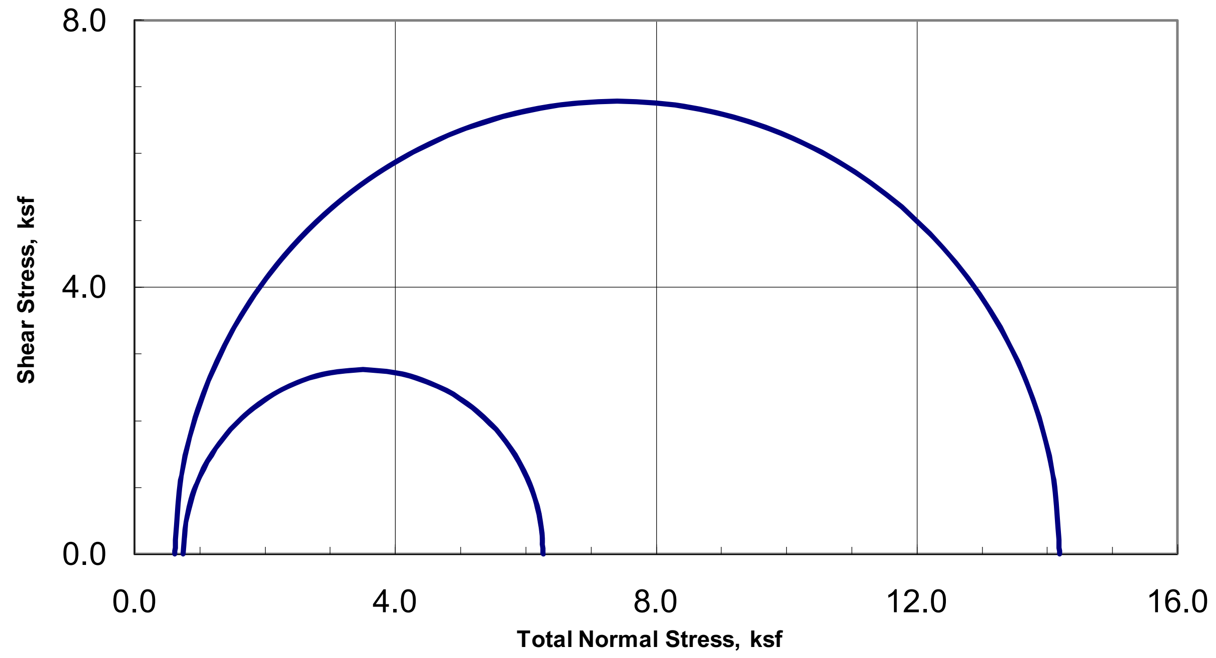
Sample Data				
	1	2	3	4
Moisture %	17.3	16.0	16.3	16.5
Dry Den,pcf	107.1	109.0	106.1	113.2
Void Ratio	0.574	0.547	0.589	0.488
Saturation %	81.2	79.0	74.8	91.0
Height in	5.00	4.99	5.02	5.00
Diameter in	2.38	2.39	2.39	2.39
Cell psi	3.5	13.9	18.2	22.6
Strain %	13.80	10.10	9.80	14.80
Deviator, ksf	6.495	14.370	9.007	6.796
Rate %/min	1.00	1.00	1.00	1.00
in/min	0.050	0.050	0.050	0.050
Job No.:	**226-175a**			
Client:	**Pacific Geotechnical Engineering**			
Project:	**Uvas Creek Levee Recertification-2227E**			
Boring:	B-1	B-1	B-1	B-1
Sample:				
Depth ft:	3.5	6	21	26

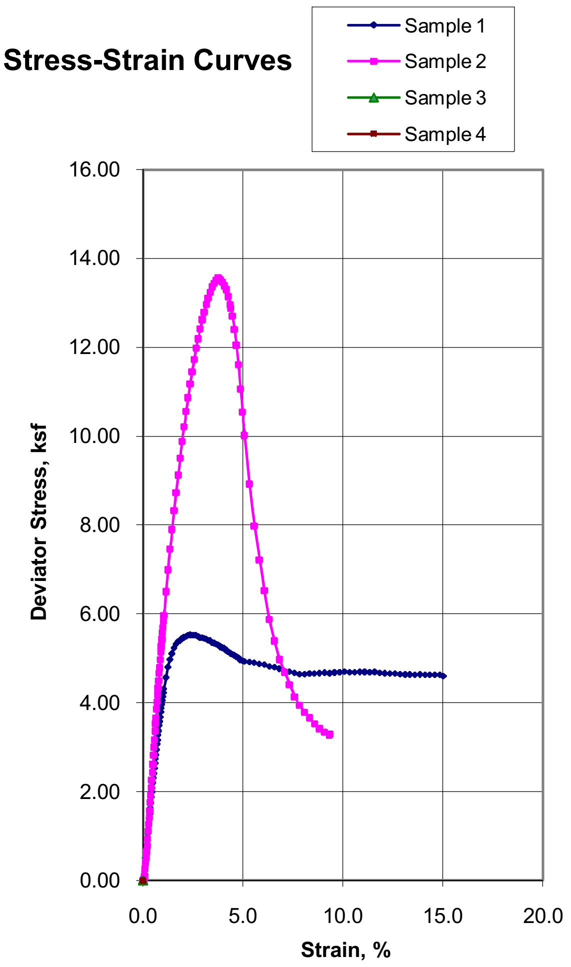
Visual Soil Description	
Sample #	
1	Brown Sandy CLAY, trace Gravel
2	Reddish Brown CLAY w/ Sand
3	Brown SILT w/ Sand (slightly plastic)
4	Reddish Brown Clayey SAND

Remarks:

Figure B-18

Unconsolidated-Undrained Triaxial Test
ASTM D-2850





Sample Data

	1	2	3	4
Moisture %	13.2	12.9		
Dry Den,pcf	92.9	115.0		
Void Ratio	0.813	0.465		
Saturation %	43.7	75.1		
Height in	5.02	5.00		
Diameter in	2.39	2.39		
Cell psi	5.2	4.3		
Strain %	2.30	3.80		
Deviator, ksf	5.528	13.570		
Rate %/min	1.00	1.00		
in/min	0.050	0.050		
Job No.:	**226-175b**			
Client:	**Pacific Geotechnical Engineering**			
Project:	**Uvas Creek Levee Recertification-2227E**			
Boring:	B-3	B-4		
Sample:				
Depth ft:	6	5		

Visual Soil Description

Sample #	
1	Brown Sandy CLAY (Silty)
2	Brown Clayey SAND w/ Gravel
3	
4	

Remarks:

Figure B-19

APPENDIX F

Summary of Liquefaction Analysis Results

ATTACHMENT F.1 SPT Liquefaction Results

ATTACHMENT F.2 CLiq Liquefaction Results

APPENDIX F

LIQUEFACTION ANALYSES

Uvas Creek Levee Recertification
Gilroy, California

Liquefaction susceptibility has been evaluated for design level ground shaking, defined as a peak ground acceleration (PGA) that has probability of exceedance of 10 percent in 50 years. Based on this definition, we used a PGA of 0.61g, with a typical (modal) Moment Magnitude of 7.9.

Liquefaction susceptibility of materials encountered in the borings has been evaluated using a spreadsheet developed by AMEC Geomatrix. We have generally followed the methods of Youd et al. (2001). For hammer energy, we have conservatively assumed a 60 percent efficiency (matching the standard value for rope-and-cathead testing). The method for analyzing the amount of settlement during a seismic event of saturated soils follows Tokimatsu and Seed (1984).

Liquefaction susceptibility of materials encountered in the CPTs has been evaluated by the computer program CLiq (Version 1.2, 2007), developed by GeoLogismiki in collaboration with Peter Robertson of Gregg Drilling. An explanation of the calculation methods used by CLiq follows the spreadsheets for the borings, and the results of the complete analyses follow the explanation of the method.

ATTACHMENT F.1

SPT Liquefaction Results

STANDARD PENETRATION TEST DATA

Parameter	Value	Units	Notes
Magnitude =	7.9		
a =	0.61	g	g=gravity
o1 = other w/ efficiency	112%	%	
o2 = other w/efficiency	133%	%	
Borehole diameter	8	in	200

Key:	
Entered	Value
Calculated	Value
Assumed	Value
🟨	Auger boring unreliable for liquefaction anaylsis

Seismic Groundwater (ft) = 25

Boring Number	Sample Depth (ft)	N	Sampler Type	Sampler Designed to Have Liners? (y/n)	Hammer Configuration	C_R	C_s	C_S	C_E	C_B	N_{60}	gwt (ft)	γ (pcf)	σ (psf)	σ' (psf)	C_N	$(N_1)_{60}$	USCS	FC (%)	Alpha	Beta	(N1)60-cs	CRR7.5 CS	CRR7.5	rd	CSR	MSF	Ks	CSR7.5	FS
B-1	2.5	33	m	n	o2	0.75	0.65	1.0	1.33	1.15	25	55.6	125	312.5	313	1.7	42	CL-SC	50	5.00	1.20	55	-	0.18	0.99	0.39	0.88	1.00	0.45	-
B-1	4	33	m	n	o2	0.75	0.65	1.0	1.33	1.15	21	55.6	125	500	500	1.7	36	CL-SC	51	5.00	1.20	48	-	-0.24	0.99	0.39	0.88	1.00	0.45	-
B-1	5.5	26	m	n	o2	0.75	0.65	1.0	1.33	1.15	17	55.6	125	687.5	688	1.7	29	CL-SC	50	5.00	1.20	40	-	0.41	0.99	0.39	0.88	1.00	0.45	-
B-1	7	27	m	n	o2	0.75	0.65	1.0	1.33	1.15	18	55.6	125	875	875	1.5	26	CL-SC	50	5.00	1.20	36	-	0.31	0.98	0.39	0.88	1.00	0.45	-
B-1	11.5	25	m	n	o2	0.8	0.65	1.0	1.33	1.15	17	55.6	125	1437.5	1438	1.2	20	CL	50	5.00	1.20	29	0.41	0.22	0.97	0.39	0.88	1.00	0.44	-
B-1	16.5	23	m	n	o2	0.85	0.65	1.0	1.33	1.15	17	55.6	125	2062.5	2063	1.0	17	CL	81	5.00	1.20	25	0.30	0.18	0.96	0.38	0.88	1.00	0.44	-
B-1	21.5	16	m	n	o2	0.95	0.65	1.0	1.33	1.15	13	55.6	125	2687.5	2688	0.9	11	CL	82	5.00	1.20	18	0.19	0.12	0.95	0.38	0.88	0.94	0.46	-
B-1	26.5	19	m	n	o2	0.95	0.65	1.0	1.33	1.15	16	55.6	125	3312.5	3313	0.8	12	CL	54	5.00	1.20	19	0.21	0.13	0.94	0.37	0.88	0.89	0.47	-
B-1	31.5	19	m	n	o2	0.95	0.65	1.0	1.33	1.15	16	55.6	125	3937.5	3938	0.7	11	CL	50	5.00	1.20	18	0.19	0.12	0.92	0.36	0.88	0.86	0.48	-
B-1	36.5	21	m	n	o2	1	0.65	1.0	1.33	1.15	18	55.6	125	4562.5	4563	0.7	12	SC	15	2.50	1.05	15	0.16	0.13	0.88	0.35	0.88	0.83	0.48	**0.33**
B-1	41	12	SPT	y	o2	1	1	1.2	1.33	1.15	18	55.6	125	5125	5125	0.6	11	SC	22	3.93	1.09	16	0.17	0.12	0.84	0.33	0.88	0.80	0.47	**0.36**
B-1	46.5	41	m	n	o2	1	0.65	1.0	1.33	1.15	35	55.6	125	5812.5	5813	0.6	21	SW-SM	10	0.87	1.02	22	0.25	0.23	0.80	0.32	0.88	0.78	0.46	**0.53**
B-1	51	150	SPT	y	o2	1	1	1.3	1.33	1.15	259	55.6	125	6375	6375	0.6	145	GW-GM	9	0.56	1.02	148	-	1.06	0.76	0.30	0.88	0.76	0.45	-
B-1	56	120	SPT	y	o2	1	1	1.3	1.33	1.15	208	55.6	125	7000	6975	0.5	111	SW-SM	9	0.56	1.02	113	-	0.80	0.72	0.29	0.88	0.74	0.44	-
B-1	61	63	SPT	y	o2	1	1	1.3	1.33	1.15	109	55.6	125	7625	7288	0.5	57	GW-GM	9	0.56	1.02	59	-	0.37	0.68	0.28	0.88	0.73	0.44	-
B-1	66.5	69	m	n	o2	1	0.65	1.0	1.33	1.15	60	55.6	125	8312.5	7632	0.5	31	SP	5	0.00	1.00	31	-	0.56	0.63	0.27	0.88	0.73	0.43	-
B-2	2.5	72	m	n	o2	0.75	0.65	1.0	1.33	1.15	47	38	125	312.5	313	1.7	79	SC	27	4.48	1.13	94	-	0.56	0.99	0.39	0.88	1.00	0.45	-
B-2	3.5	100	m	n	o2	0.75	0.65	1.0	1.33	1.15	65	38	125	437.5	438	1.7	110	SC	23	4.06	1.10	125	-	0.80	0.99	0.39	0.88	1.00	0.45	-
B-2	5	100	m	n	o2	0.75	0.65	1.0	1.33	1.15	65	38	125	625	625	1.7	110	SC	26	4.39	1.12	128	-	0.80	0.99	0.39	0.88	1.00	0.45	-
B-2	7	55	m	n	o2	0.75	0.65	1.0	1.33	1.15	36	38	125	875	875	1.5	54	SC	23	4.06	1.10	63	-	0.35	0.98	0.39	0.88	1.00	0.45	-
B-2	8.5	27	m	n	o2	0.75	0.65	1.0	1.33	1.15	18	38	125	1062.5	1063	1.4	24	SC	23	4.06	1.10	30	-	0.27	0.98	0.39	0.88	1.00	0.44	-
B-2	10	34	m	n	o2	0.75	0.65	1.0	1.33	1.15	22	38	125	1250	1250	1.3	28	SP-SM	9	0.56	1.02	29	0.41	0.37	0.98	0.39	0.88	1.00	0.44	-
B-2	11.5	23	m	n	o2	0.8	0.65	1.0	1.33	1.15	16	38	125	1437.5	1438	1.2	19	SM	23	4.06	1.10	25	0.29	0.20	0.97	0.39	0.88	1.00	0.44	-
B-2	16.5	41	m	n	o2	0.85	0.65	1.0	1.33	1.15	30	38	125	2062.5	2063	1.0	30	GW	4	0.00	1.00	30	-	0.47	0.96	0.38	0.88	1.00	0.44	-
B-2	21.5	16	SPT	y	o2	0.95	1	1.2	1.33	1.15	24	38	125	2687.5	2688	0.9	21	GW-SW	5	0.00	1.00	21	0.23	0.23	0.95	0.38	0.88	0.94	0.46	-
B-2	26.5	28	SPT	y	o2	0.95	1	1.3	1.33	1.15	45	38	125	3312.5	3313	0.8	35	GW-SW	5	0.00	1.00	35	-	-0.75	0.94	0.37	0.88	0.89	0.47	-
B-2	31	120	SPT	y	o2	0.95	1	1.3	1.33	1.15	197	38	125	3875	3875	0.7	142	GW-GM	9	0.56	1.02	145	-	1.04	0.92	0.37	0.88	0.86	0.49	-
B-2	36.5	30	SPT	y	o2	1	1	1.3	1.33	1.15	52	38	125	4562.5	4563	0.7	34	GW-GM	6	0.03	1.00	34	-	#DIV/0!	0.88	0.35	0.88	0.83	0.48	-
B-2	41	34	SPT	y	o2	1	1	1.3	1.33	1.15	59	38	125	5125	4938	0.6	37	GP-GM	9	0.56	1.02	38	-	-0.06	0.84	0.35	0.88	0.81	0.49	-
B-2	46.5	38	SPT	y	o2	1	1	1.3	1.33	1.15	66	38	125	5812.5	5282	0.6	40	SP-SM	11	1.21	1.03	42	-	0.12	0.80	0.35	0.88	0.80	0.50	-
B-2	51.5	65	SPT	y	o2	1	1	1.3	1.33	1.15	112	38	125	6437.5	5595	0.6	67	SP-SM	9	0.56	1.02	69	-	0.46	0.75	0.34	0.88	0.78	0.50	-
B-2	56	83	SPT	y	o2	1	1	1.3	1.33	1.15	144	38	125	7000	5877	0.6	84	SP-SM	9	0.56	1.02	86	-	0.60	0.72	0.34	0.88	0.77	0.50	-
B-2	61	100	SPT	y	o2	1	1	1.3	1.33	1.15	173	38	125	7625	6190	0.6	98	GP-GM	9	0.56	1.02	100	-	0.71	0.68	0.33	0.88	0.76	0.49	-
B-2	66.5	76	SPT	y	o2	1	1	1.3	1.33	1.15	131	38	125	8312.5	6534	0.6	73	SP-SM	11	1.21	1.03	76	-	0.51	0.63	0.32	0.88	0.75	0.48	-
B-2	69.5	100	SPT	y	o2	1	1	1.3	1.33	1.15	173	38	125	8687.5	6722	0.5	94	SP-SM	9	0.56	1.02	96	-	0.67	0.61	0.31	0.88	0.75	0.48	-
B-3	1.5	150	m	n	o2	0.75	0.65	1.0	1.33	1.00	97	19	125	187.5	188	1.7	165	SC	23	4.06	1.10	186	-	1.21	1.00	0.40	0.88	1.00	0.45	-
B-3	3.5	25	m	n	o2	0.75	0.65	1.0	1.33	1.00	16	19	125	437.5	438	1.7	28	CL	50	5.00	1.20	39	-	0.37	0.99	0.39	0.88	1.00	0.45	-
B-3	5	14	m	n	o2	0.75	0.65	1.0	1.33	1.00	9	19	125	625	625	1.7	15	CL	50	5.00	1.20	23	0.26	0.16	0.99	0.39	0.88	1.00	0.45	-
B-3	6.5	18	m	n	o2	0.75	0.65	1.0	1.33	1.00	12	19	125	812.5	813	1.6	18	CL	79	5.00	1.20	27	0.33	0.19	0.98	0.39	0.88	1.00	0.45	-
B-3	8	16	m	n	o2	0.75	0.65	1.0	1.33	1.00	10	19	125	1000	1000	1.4	15	CL	50	5.00	1.20	23	0.26	0.16	0.98	0.39	0.88	1.00	0.44	-
B-3	9.5	28	m	n	o2	0.75	0.65	1.0	1.33	1.00	18	19	125	1187.5	1188	1.3	24	CL	50	5.00	1.20	34	-	0.27	0.98	0.39	0.88	1.00	0.44	-
B-3	11	30	m	n	o2	0.8	0.65	1.0	1.33	1.15	21	19	125	1375	1375	1.2	25	SC	47	5.00	1.20	35	-	0.29	0.97	0.39	0.88	1.00	0.44	-
B-3	16.5	31	m	n	o2	0.85	0.65	1.0	1.33	1.15	23	19	125	2062.5	2063	1.0	22	SP-SM	7	0.12	1.01	22	0.25	0.24	0.96	0.38	0.88	1.00	0.44	-
B-3	21.5	32	m	n	o2	0.95	0.65	1.0	1.33	1.15	26	19	125	2687.5	2532	0.9	23	GW-GM	9	0.56	1.02	24	0.27	0.26	0.95	0.40	0.88	0.96	0.48	-
B-3	23	33	SPT	y	o2	0.95	1	1.3	1.33	1.15	54	19	125	2875	2625	0.9	47	GW-GM	9	0.56	1.02	48	-	0.27	0.95	0.41	0.88	0.95	0.49	-
B-3	26.5	72	m	n	o2	0.95	0.65	1.0	1.33	1.15	59	19	125	3312.5	2845	0.8	50	GW-GM	7	0.12	1.01	51	-	0.30	0.94	0.43	0.88	0.93	0.53	-
B-3	31.5	51	SPT	y	o2	0.95	1	1.3	1.33	1.15	84	19	125	3937.5	3158	0.8	67	SP-SM	9	0.56	1.02	69	-	0.46	0.92	0.45	0.88	0.90	0.57	-
B-3	36.5	70	SPT	y	o2	1	1	1.3	1.33	1.15	121	19	125	4562.5	3471	0.8	92	SP-SM	11	1.21	1.03	96	-	0.66	0.88	0.46	0.88	0.88	0.59	-
B-3	41	43	SPT	y	o2	1	1	1.3	1.33	1.15	74	19	125	5125	3752	0.7	54	SP-SM	9	0.56	1.02	55	-	0.35	0.84	0.46	0.88	0.87	0.60	-
B-3	46.5	43	SPT	y	o2	1	1	1.3	1.33	1.15	74	19	125	5812.5	4097	0.7	52	SP-SM	9	0.56	1.02	53	-	0.32	0.80	0.45	0.88	0.85	0.60	-
B-3	51.5	52	SPT	y	o2	1	1	1.3	1.33	1.15	90	19	125	6437.5	4410	0.7	61	SC	14	2.20	1.04	66	-	0.41	0.75	0.44	0.88	0.83	0.60	-
B-3	56.5	43	SPT	y	o2	1	1	1.3	1.33	1.15	74	19	125	7062.5	4723	0.7	48	SC	23	4.06	1.10	57	-	0.28	0.71	0.42	0.88	0.82	0.59	-
B-3	61	100	SPT	y	o2	1	1	1.3	1.33	1.15	173	19	125	7625	5004	0.6	109	GC	20	3.61	1.08	121	-	0.79	0.68	0.41	0.88	0.81	0.58	-
B-3	66.5	27	SPT	y	o2	1	1	1.3	1.33	1.15	46	19	125	8312.5	5349	0.6	28	SC	40	5.00	1.20	39	-	0.37	0.63	0.39	0.88	0.79	0.56	-
B-3	71.5	67	m	n	o2	1	0.65	1.0	1.33	1.15	58	19	125	8937.5	5662	0.6	34	CL	50	5.00	1.20	46	-	#DIV/0!	0.59	0.37	0.88	0.78	0.54	-

STANDARD PENETRATION TEST DATA

Parameter	Value	Units	Notes
Magnitude =	7.9		
a =	0.61	g	g=gravity
o1 = other w/ efficiency	112%	%	
o2 = other w/efficiency	133%	%	
Borehole diameter	4	in	100

Key:	
Entered	Value
Calculated	Value
Assumed	Value
🟨	Auger boring unreliable for liquefaction anaylsis

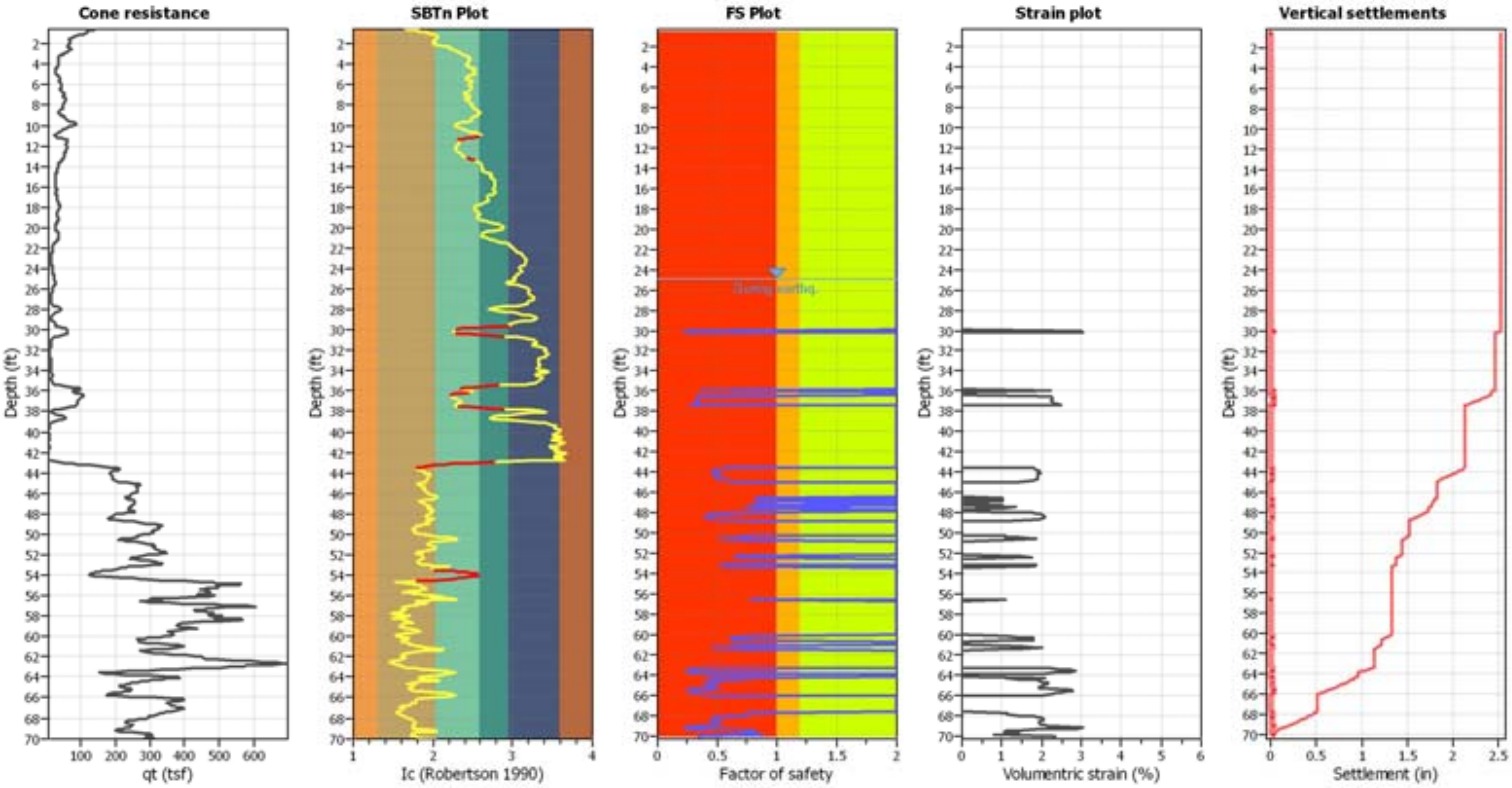
Seismic Groundwater (ft) = 15

Boring Number	Sample Depth (ft)	N	Sampler Type	Sampler Designed to Have Liners? (y/n)	Hammer Configuration	C_R	C_s	C_S	C_E	C_B	N_{60}	gwt (ft)	γ (pcf)	σ (psf)	σ' (psf)	C_N	$(N_1)_{60}$	USCS	FC (%)	Alpha	Beta	(N1)60-cs	CRR7.5 CS	CRR7.5	rd	CSR	MSF	Ks	CSR7.5	FS
2F-7	2.0	20	SPT	y	o1	0.75	1	1.2	1.12	1.00	20	20	125	250	250	1.7	35	SC	23	4.06	1.10	43	-	-0.75	1.00	0.39	0.88	1.00	0.45	-
2F-7	4.5	17	SPT	y	o1	0.75	1	1.2	1.12	1.00	17	20	125	562.5	563	1.7	29	CL	76	5.00	1.20	40	-	0.41	0.99	0.39	0.88	1.00	0.45	-
2F-7	7.0	18	SPT	y	o1	0.75	1	1.2	1.12	1.00	18	20	125	875	875	1.5	28	CL	50	5.00	1.20	39	-	0.37	0.98	0.39	0.88	1.00	0.45	-
2F-7	9.5	31	SPT	y	o1	0.75	1	1.3	1.12	1.00	34	20	125	1187.5	1188	1.3	44	CL	50	5.00	1.20	58	-	0.22	0.98	0.39	0.88	1.00	0.44	-
2F-7	12.0	16	SPT	y	o1	0.8	1	1.2	1.12	1.00	17	20	125	1500	1500	1.2	20	CL	50	5.00	1.20	29	0.41	0.22	0.97	0.39	0.88	1.00	0.44	-
2F-7	14.5	23	SPT	y	o1	0.85	1	1.2	1.12	1.00	27	20	125	1812.5	1813	1.1	29	CL	50	5.00	1.20	40	-	0.41	0.97	0.38	0.88	1.00	0.44	-
2F-7	17.0	15	SPT	y	o1	0.85	1	1.2	1.12	1.00	17	20	125	2125	2125	1.0	16	SM	49	5.00	1.20	24	0.28	0.17	0.96	0.38	0.88	1.00	0.44	**0.64**
2F-7	19.5	22	SPT	y	o1	0.85	1	1.2	1.12	1.00	26	20	125	2437.5	2438	0.9	23	CL	55	5.00	1.20	33	-	0.26	0.95	0.38	0.88	0.97	0.45	-
DH-6A	6.0	26	SPT	y	o1	0.75	1	1.3	1.12	1.00	28	25	125	750	750	1.6	45	CL	50	5.00	1.20	59	-	0.24	0.99	0.39	0.88	1.00	0.45	-
DH-6A	11.0	27	SPT	y	o1	0.8	1	1.3	1.12	1.00	31	25	125	1375	1375	1.2	37	CL	50	5.00	1.20	49	-	-0.06	0.97	0.39	0.88	1.00	0.44	-
DH-6A	16.0	13	SPT	y	o1	0.85	1	1.2	1.12	1.00	14	25	125	2000	2000	1.0	14	CL	50	5.00	1.20	22	0.24	0.15	0.96	0.38	0.88	1.00	0.44	-
DH-6A	21.0	9	SPT	y	o1	0.95	1	1.1	1.12	1.00	11	25	125	2625	2625	0.9	9	CL	50	5.00	1.20	16	0.17	0.10	0.95	0.38	0.88	0.95	0.45	-
DH-6A	25.0	13	SPT	y	o1	0.95	1	1.2	1.12	1.00	16	25	125	3125	3125	0.8	13	CL	50	5.00	1.20	21	0.22	0.14	0.94	0.37	0.88	0.91	0.47	-
2F-9	2.0	20	SPT	y	o1	0.75	1	1.2	1.12	1.00	20	20	125	250	250	1.7	35	CL	50	5.00	1.20	47	-	-0.75	1.00	0.39	0.88	1.00	0.45	-
2F-9	4.5	11	SPT	y	o1	0.75	1	1.1	1.12	1.00	11	20	125	562.5	563	1.7	18	CL	50	5.00	1.20	27	0.33	0.19	0.99	0.39	0.88	1.00	0.45	-
2F-9	7.0	12	SPT	y	o1	0.75	1	1.2	1.12	1.00	12	20	125	875	875	1.5	18	CL	83	5.00	1.20	27	0.33	0.19	0.98	0.39	0.88	1.00	0.45	-
2F-9	9.5	12	SPT	y	o1	0.75	1	1.2	1.12	1.00	12	20	125	1187.5	1188	1.3	15	CL	50	5.00	1.20	23	0.26	0.16	0.98	0.39	0.88	1.00	0.44	-
2F-9	12.0	5	SPT	y	o1	0.8	1	1.1	1.12	1.00	5	20	125	1500	1500	1.2	6	ML	59	5.00	1.20	12	0.13	0.08	0.97	0.39	0.88	1.00	0.44	-
2F-9	14.5	7	SPT	y	o1	0.85	1	1.1	1.12	1.00	7	20	125	1812.5	1813	1.1	8	CL	50	5.00	1.20	15	0.16	0.10	0.97	0.38	0.88	1.00	0.44	-
2F-9	17.0	10	SPT	y	o1	0.85	1	1.1	1.12	1.00	11	20	125	2125	2125	1.0	10	CL	50	5.00	1.20	17	0.18	0.11	0.96	0.38	0.88	1.00	0.44	-
2F-9	19.5	9	SPT	y	o1	0.85	1	1.1	1.12	1.00	10	20	125	2437.5	2438	0.9	9	CL	50	5.00	1.20	16	0.17	0.10	0.95	0.38	0.88	0.97	0.45	-
2F-8	2.0	12	SPT	y	o1	0.75	1	1.2	1.12	1.00	12	20	125	250	250	1.7	20	CL	73	5.00	1.20	29	0.41	0.22	1.00	0.39	0.88	1.00	0.45	-
2F-8	4.5	5	SPT	y	o1	0.75	1	1.1	1.12	1.00	5	20	125	562.5	563	1.7	8	CL	50	5.00	1.20	15	0.16	0.10	0.99	0.39	0.88	1.00	0.45	-
2F-8	7.0	11	SPT	y	o1	0.75	1	1.1	1.12	1.00	11	20	125	875	875	1.5	16	CL	50	5.00	1.20	24	0.28	0.17	0.98	0.39	0.88	1.00	0.45	-
2F-8	9.5	14	SPT	y	o1	0.75	1	1.2	1.12	1.00	14	20	125	1187.5	1188	1.3	18	CL	50	5.00	1.20	27	0.33	0.19	0.98	0.39	0.88	1.00	0.44	-
2F-8	12.0	12	SPT	y	o1	0.8	1	1.2	1.12	1.00	12	20	125	1500	1500	1.2	14	CL	76	5.00	1.20	22	0.24	0.15	0.97	0.39	0.88	1.00	0.44	-
2F-8	14.5	8	SPT	y	o1	0.85	1	1.1	1.12	1.00	9	20	125	1812.5	1813	1.1	9	CL	50	5.00	1.20	16	0.17	0.10	0.97	0.38	0.88	1.00	0.44	-
2F-8	17.0	9	SPT	y	o1	0.85	1	1.1	1.12	1.00	10	20	125	2125	2125	1.0	9	CL	50	5.00	1.20	16	0.17	0.10	0.96	0.38	0.88	1.00	0.44	-
2F-8	19.5	13	SPT	y	o1	0.85	1	1.2	1.12	1.00	14	20	125	2437.5	2438	0.9	13	CL	50	5.00	1.20	21	0.22	0.14	0.95	0.38	0.88	0.97	0.45	-
2F-10	2.0	9	SPT	y	o1	0.75	1	1.1	1.12	1.00	9	20	125	250	250	1.7	14	CL	70	5.00	1.20	22	0.24	0.15	1.00	0.39	0.88	1.00	0.45	-
2F-10	4.5	8	SPT	y	o1	0.75	1	1.1	1.12	1.00	8	20	125	562.5	563	1.7	13	CL	50	5.00	1.20	21	0.22	0.14	0.99	0.39	0.88	1.00	0.45	-
2F-10	7.0	10	SPT	y	o1	0.75	1	1.1	1.12	1.00	10	20	125	875	875	1.5	14	CL	50	5.00	1.20	22	0.24	0.15	0.98	0.39	0.88	1.00	0.45	-
2F-10	9.5	14	SPT	y	o1	0.75	1	1.2	1.12	1.00	14	20	125	1187.5	1188	1.3	18	CL	50	5.00	1.20	27	0.33	0.19	0.98	0.39	0.88	1.00	0.44	-
2F-10	12.0	13	SPT	y	o1	0.8	1	1.2	1.12	1.00	14	20	125	1500	1500	1.2	16	CL	50	5.00	1.20	24	0.28	0.17	0.97	0.39	0.88	1.00	0.44	-
2F-10	14.5	9	SPT	y	o1	0.85	1	1.1	1.12	1.00	10	20	125	1812.5	1813	1.1	10	CL	76	5.00	1.20	17	0.18	0.11	0.97	0.38	0.88	1.00	0.44	-
2F-10	17.0	7	SPT	y	o1	0.85	1	1.1	1.12	1.00	7	20	125	2125	2125	1.0	7	CL	50	5.00	1.20	13	0.14	0.09	0.96	0.38	0.88	1.00	0.44	-
2F-10	19.5	11	SPT	y	o1	0.85	1	1.1	1.12	1.00	12	20	125	2437.5	2438	0.9	11	CL	68	5.00	1.20	18	0.19	0.12	0.95	0.38	0.88	0.97	0.45	-
1	2.5	27	m	n	o1	0.75	0.65	1.0	1.12	1.00	15	42	125	312.5	313	1.7	25	CL	50	5.00	1.20	35	-	0.29	0.99	0.39	0.88	1.00	0.45	-
1	6.5	23	m	n	o1	0.75	0.65	1.0	1.12	1.00	13	42	125	812.5	813	1.6	20	CL	50	5.00	1.20	29	0.41	0.22	0.98	0.39	0.88	1.00	0.45	-
1	11.5	29	m	n	o1	0.8	0.65	1.0	1.12	1.00	17	42	125	1437.5	1438	1.2	20	CL	50	5.00	1.20	29	0.41	0.22	0.97	0.39	0.88	1.00	0.44	-
1	16.5	23	m	n	o1	0.85	0.65	1.0	1.12	1.00	14	42	125	2062.5	2063	1.0	14	CL	51	5.00	1.20	22	0.24	0.15	0.96	0.38	0.88	1.00	0.44	-
1	21.5	24	m	n	o1	0.95	0.65	1.0	1.12	1.00	17	42	125	2687.5	2688	0.9	14	CL	50	5.00	1.20	22	0.24	0.15	0.95	0.38	0.88	0.94	0.46	-
1	26.5	27	m	n	o1	0.95	0.65	1.0	1.12	1.00	19	42	125	3312.5	3313	0.8	14	SM-SC	19	3.43	1.07	18	0.20	0.15	0.94	0.37	0.88	0.89	0.47	**0.41**
1	31.5	39	m	n	o1	0.95	0.65	1.0	1.12	1.00	27	42	125	3937.5	3938	0.7	19	SC	23	4.06	1.10	25	0.29	0.20	0.92	0.36	0.88	0.86	0.48	**0.60**
1	36.5	39	m	n	o1	1	0.65	1.0	1.12	1.00	28	42	125	4562.5	4563	0.7	19	GC-CL	50	5.00	1.20	28	0.36	0.20	0.88	0.35	0.88	0.83	0.48	**0.75**
1	41.5	33	m	n	o1	1	0.65	1.0	1.12	1.00	24	42	125	5187.5	5188	0.6	15	GC-CL	50	5.00	1.20	23	0.26	0.16	0.84	0.33	0.88	0.80	0.47	**0.54**
2	2.5	12	SPT	y	o1	0.75	1	1.2	1.12	1.00	12	42	125	312.5	313	1.7	20	CL	50	5.00	1.20	29	0.41	0.22	0.99	0.39	0.88	1.00	0.45	-
2	6.5	20	m	n	o1	0.75	0.65	1.0	1.12	1.00	11	42	125	812.5	813	1.6	17	CL	50	5.00	1.20	25	0.30	0.18	0.98	0.39	0.88	1.00	0.45	-
2	11.5	46	m	n	o1	0.8	0.65	1.0	1.12	1.00	27	42	125	1437.5	1438	1.2	31	CL	50	5.00	1.20	42	-	0.56	0.97	0.39	0.88	1.00	0.44	-
2	16.5	68	m	n	o1	0.85	0.65	1.0	1.12	1.00	42	42	125	2062.5	2063	1.0	41	CL-GC	50	5.00	1.20	54	-	0.16	0.96	0.38	0.88	1.00	0.44	-
2	21.5	34	m	n	o1	0.95	0.65	1.0	1.12	1.00	23	42	125	2687.5	2688	0.9	20	CL-GC	50	5.00	1.20	29	0.41	0.22	0.95	0.38	0.88	0.94	0.46	**0.90**
2	26.5	58	m	n	o1	0.95	0.65	1.0	1.12	1.00	40	42	125	3312.5	3313	0.8	31	CL-GC	50	5.00	1.20	42	-	0.56	0.94	0.37	0.88	0.89	0.47	-
2	31.5	49	m	n	o1	0.95	0.65	1.0	1.12	1.00	34	42	125	3937.5	3938	0.7	24	CL	50	5.00	1.20	34	-	0.27	0.92	0.36	0.88	0.86	0.48	-
2	36.5	90	m	n	o1	1	0.65	1.0	1.12	1.00	65	42	125	4562.5	4563	0.7	43	CL	50	5.00	1.20	57	-	0.20	0.88	0.35	0.88	0.83	0.48	-
2	41.5	59	m	n	o1	1	0.65	1.0	1.12	1.00	43	42	125	5187.5	5188	0.6	27	CL	50	5.00	1.20	37	-	0.34	0.84	0.33	0.88	0.80	0.47	-
DH-4A	6.0	8	SPT	y	o1	0.75	1	1.1	1.12	1.00	8	25	125	750	750	1.6	12	CL-ML	50	5.00	1.20	19	0.21	0.13	0.99	0.39	0.88	1.00	0.45	-
DH-4A	11.0	7	SPT	y	o1	0.8	1	1.1	1.12	1.00	7	25	125	1375	1375	1.2	8	ML	50	5.00	1.20	15	0.16	0.10	0.97	0.39	0.88	1.00	0.44	-
DH-4A	16.0	13	SPT	y	o1	0.85	1	1.2	1.12	1.00	14	25	125	2000	2000	1.0	14	ML	50	5.00	1.20	22	0.24	0.15	0.96	0.38	0.88	1.00	0.44	**0.55**
DH-4A	21.0	9	SPT	y	o1	0.95	1	1.1	1.12	1.00	11	25	125	2625	2625	0.9	9	ML	76	5.00	1.20	16	0.17	0.10	0.95	0.38	0.88	0.95	0.45	**0.37**

ATTACHMENT F.2

CLiq Liquefaction Results

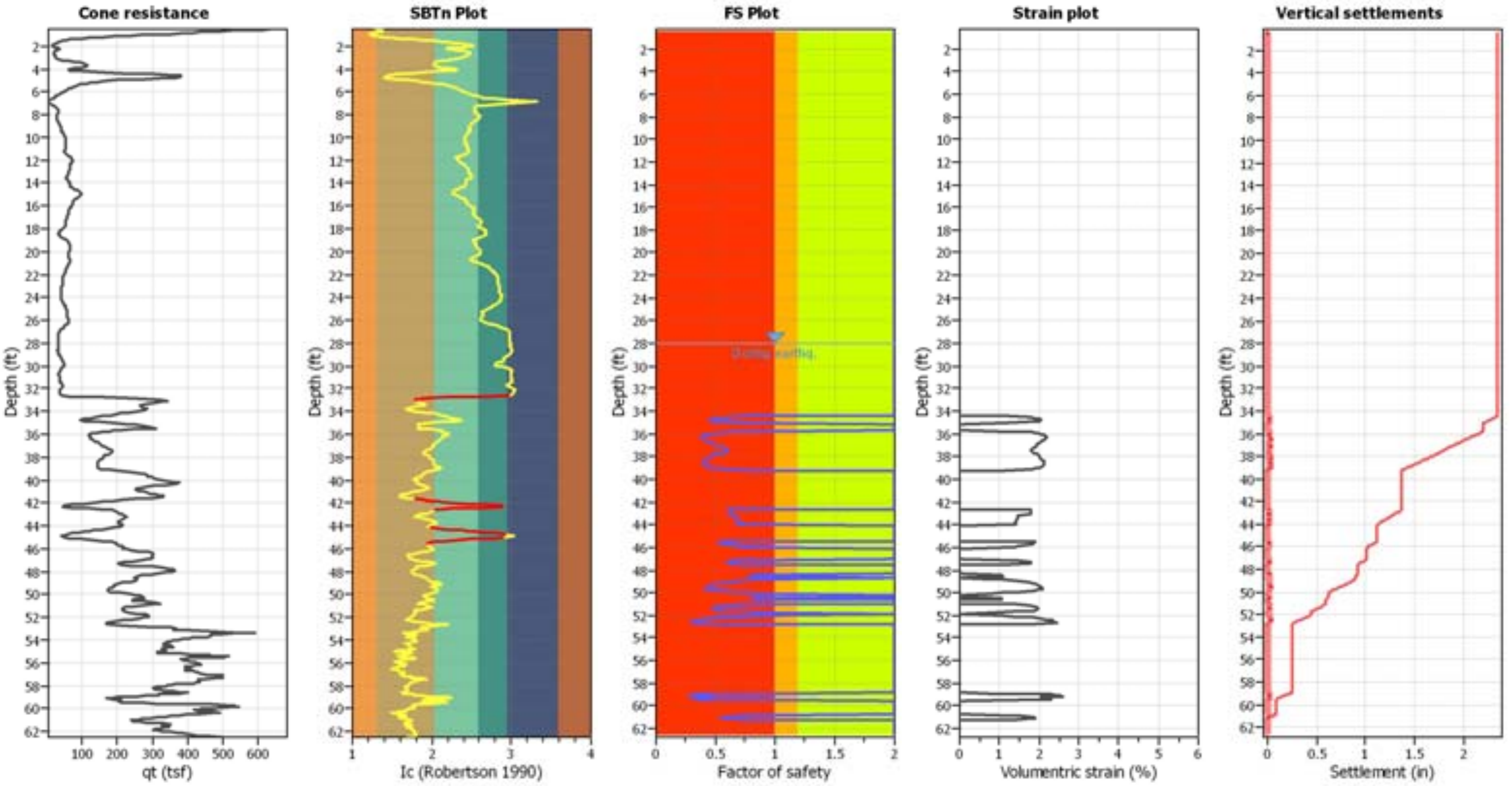
Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

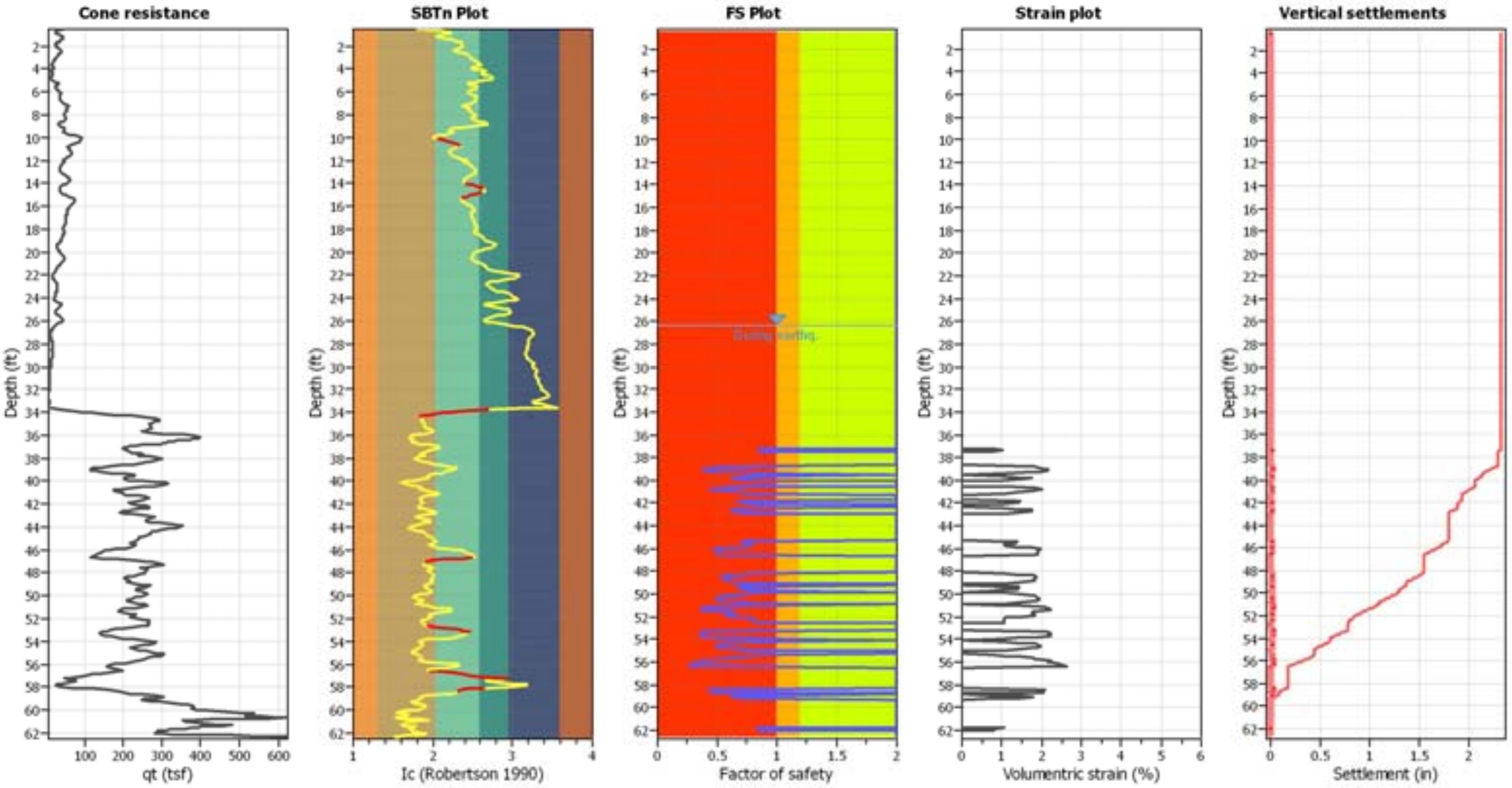
Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Estimation of post-earthquake settlements



Cone resistance

SBTn Plot

FS Plot

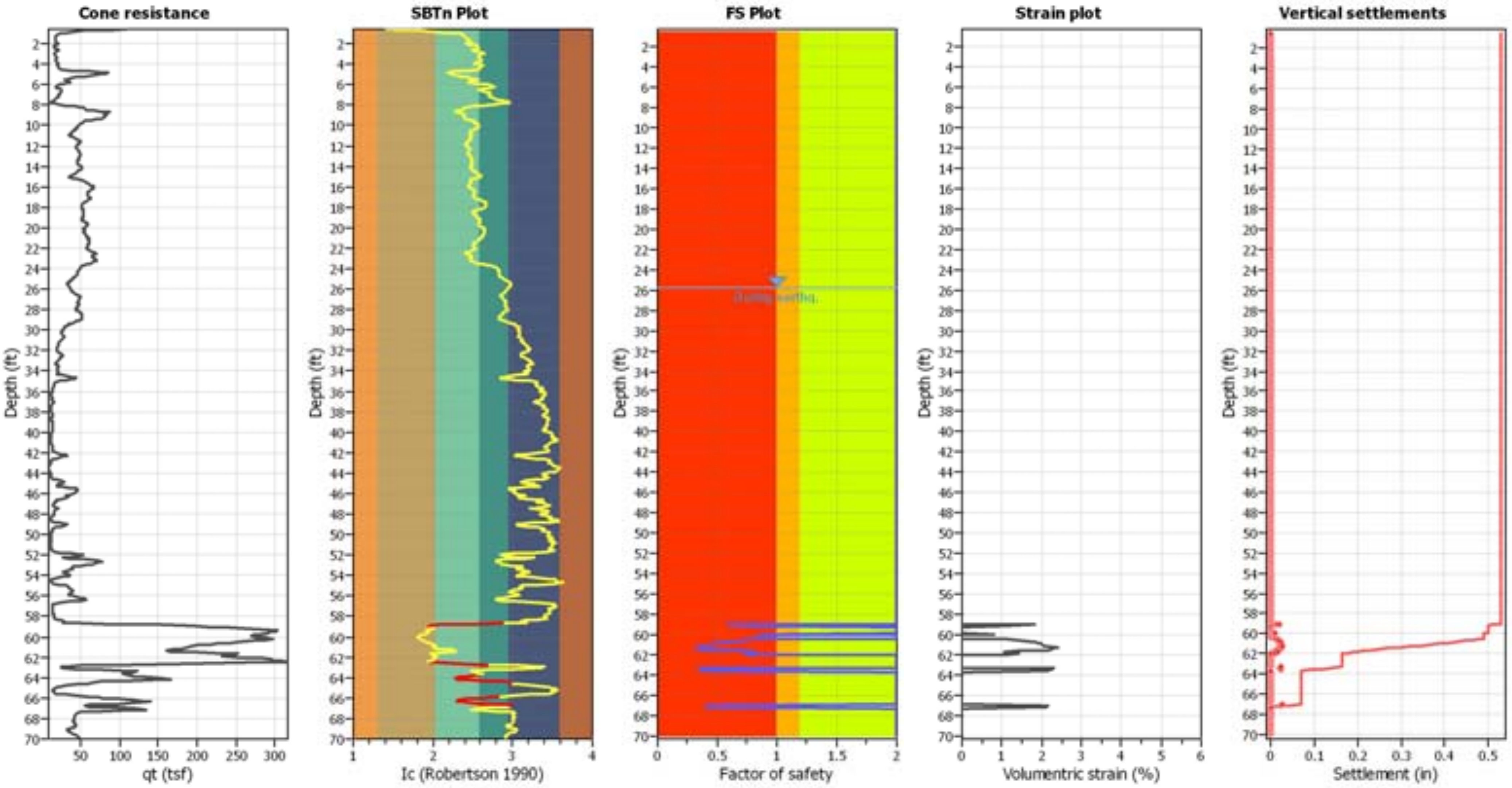
Strain plot

Vertical settlements

Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

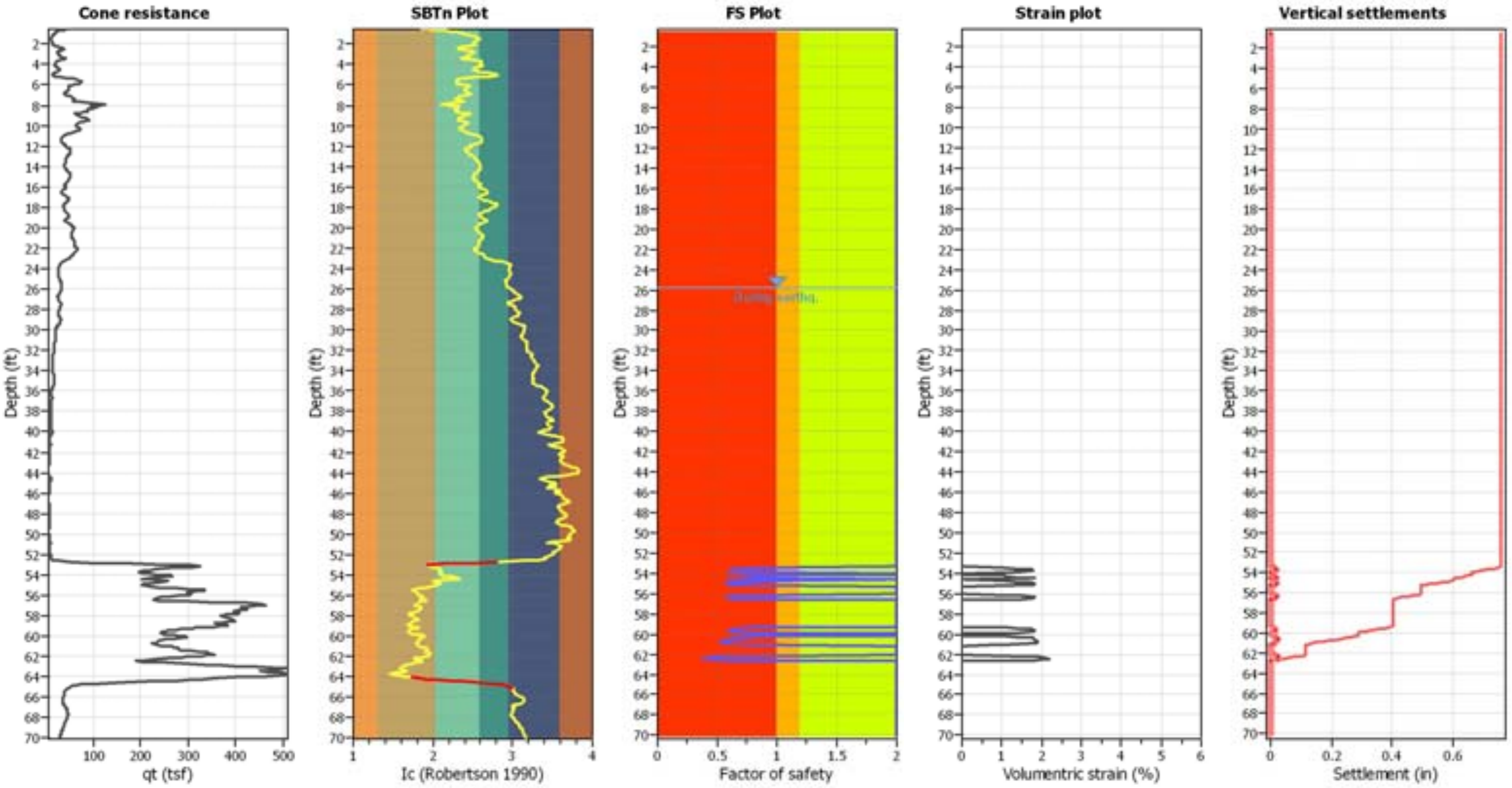
Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

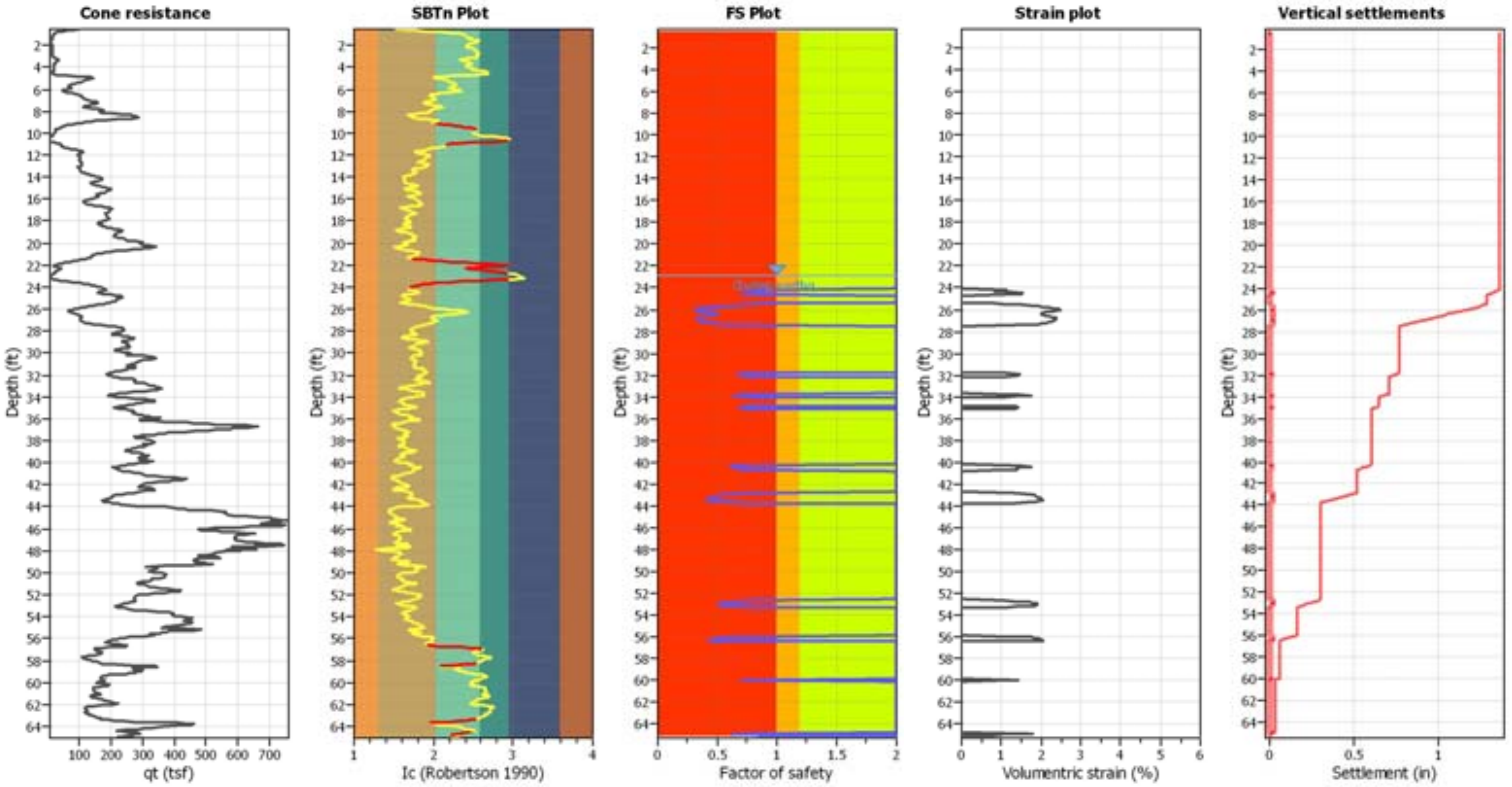
Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Estimation of post-earthquake settlements



Cone resistance

SBTn Plot

FS Plot

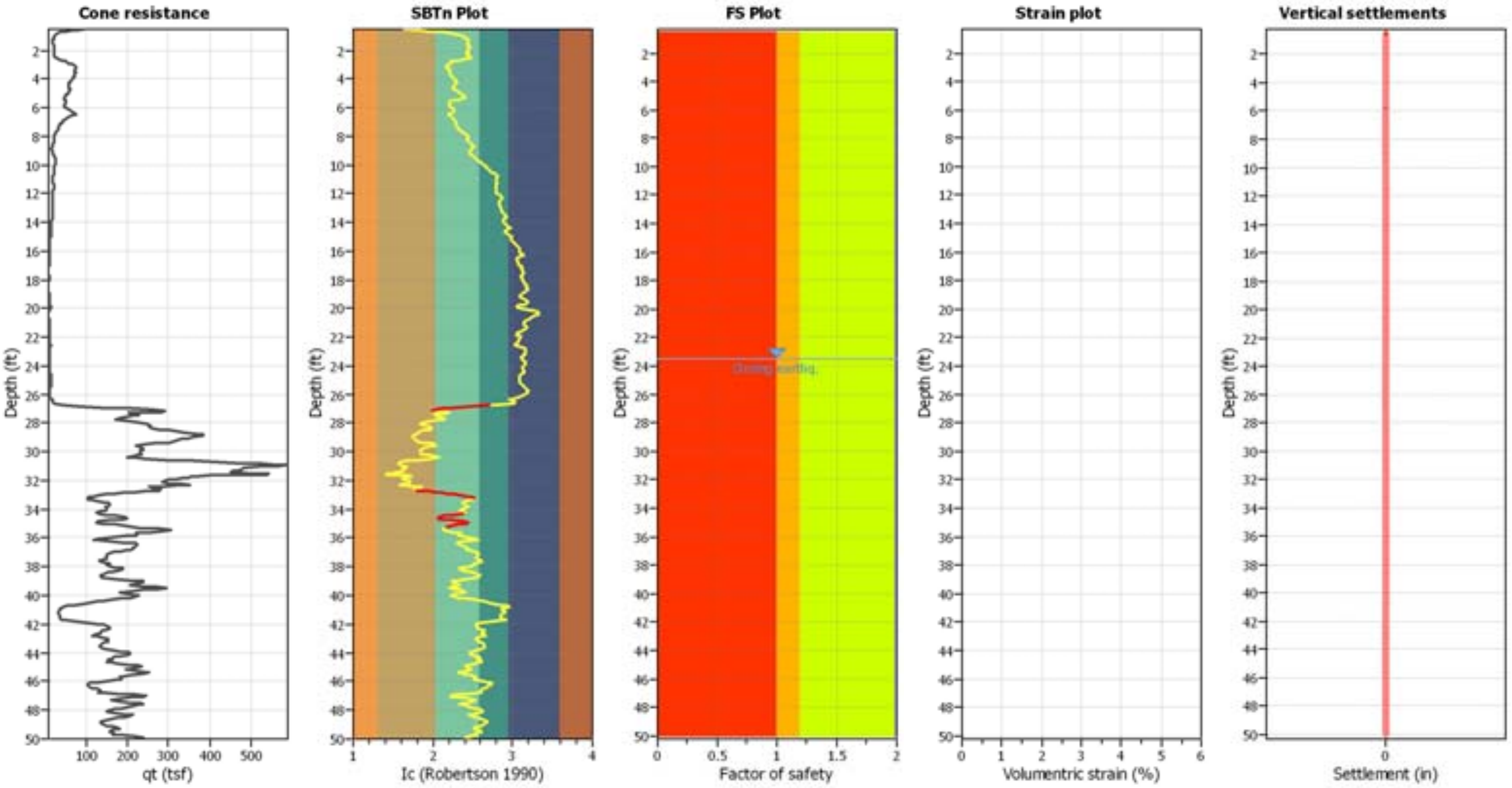
Strain plot

Vertical settlements

Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

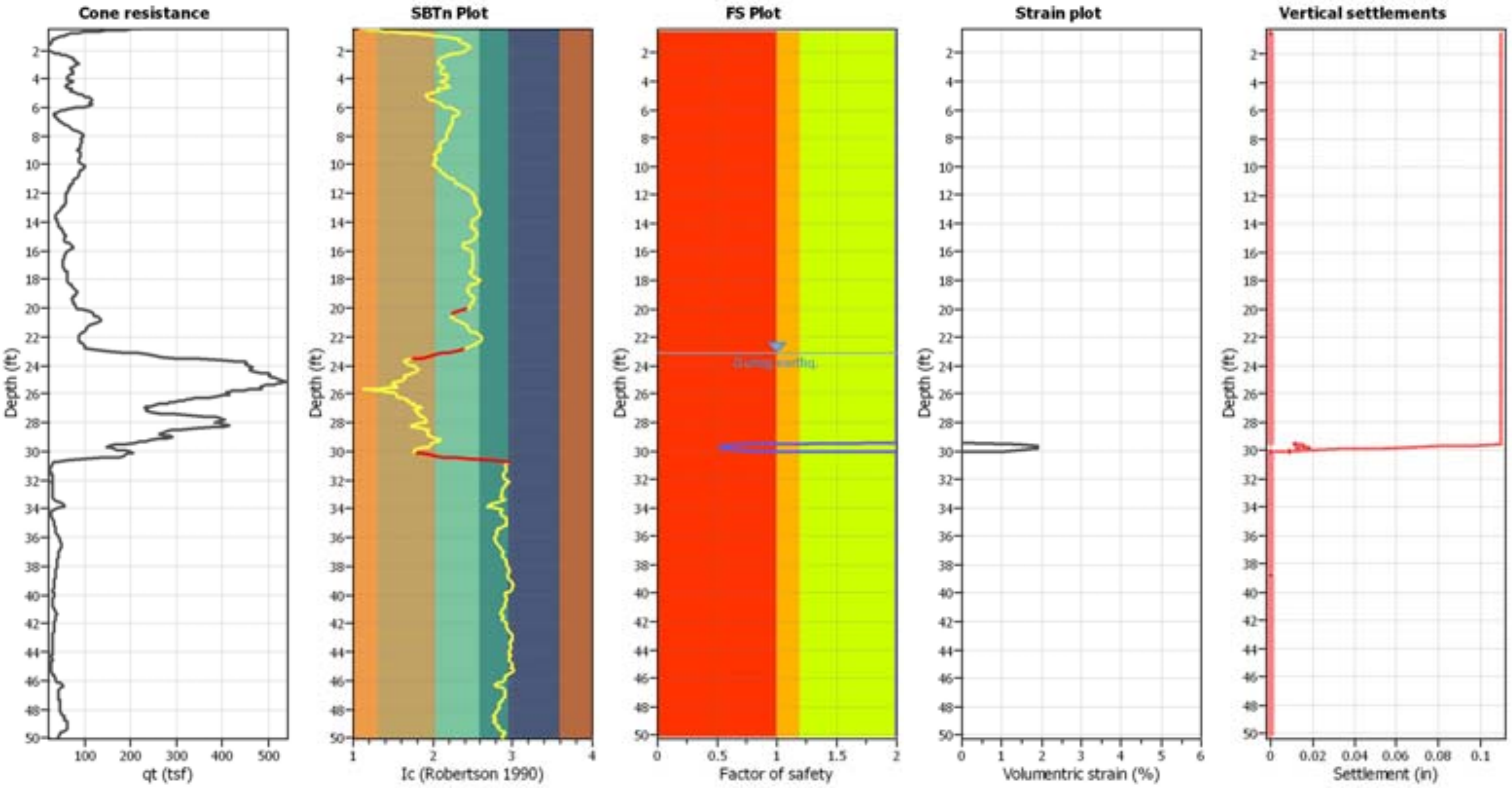
Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

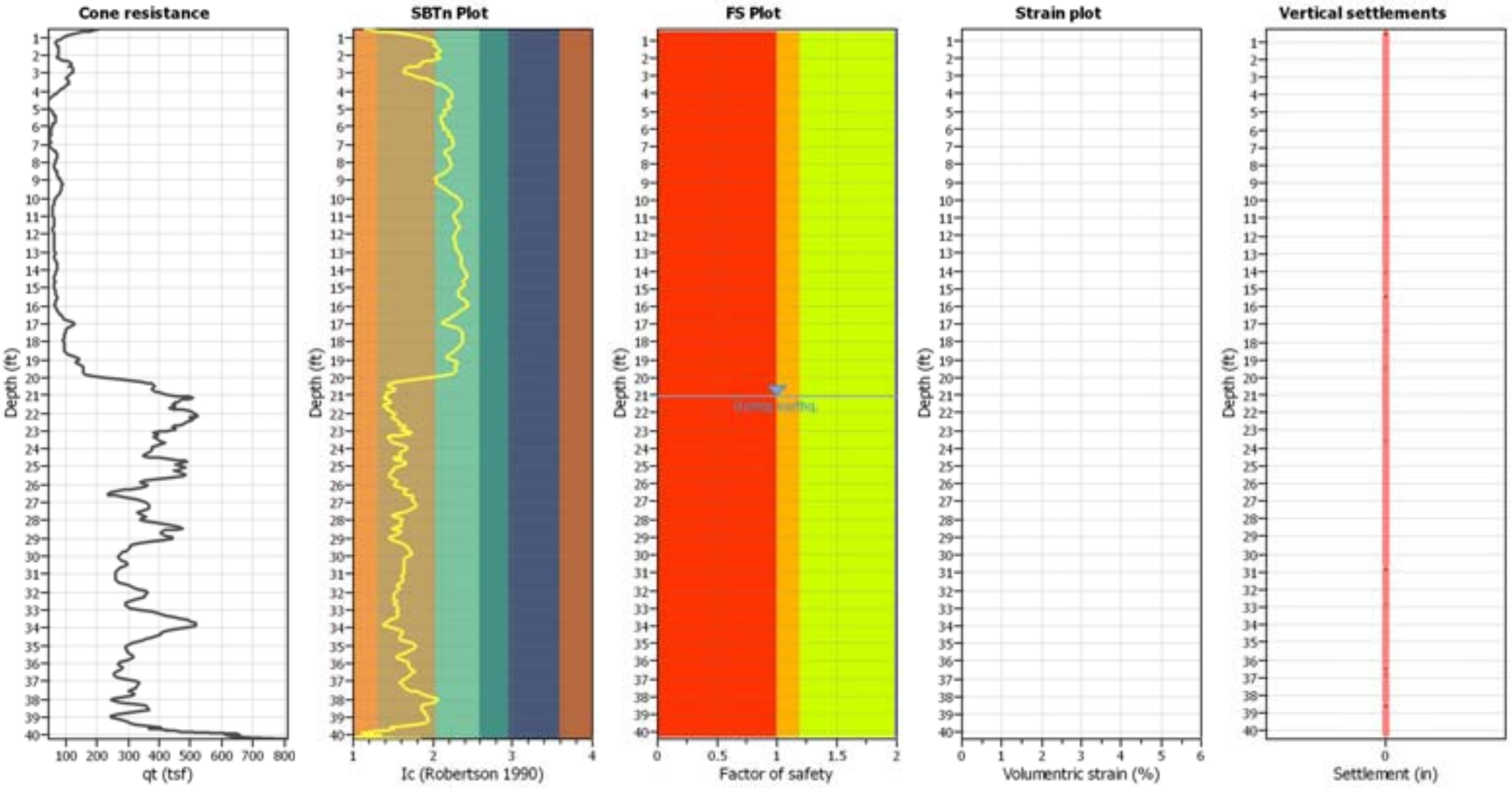
Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

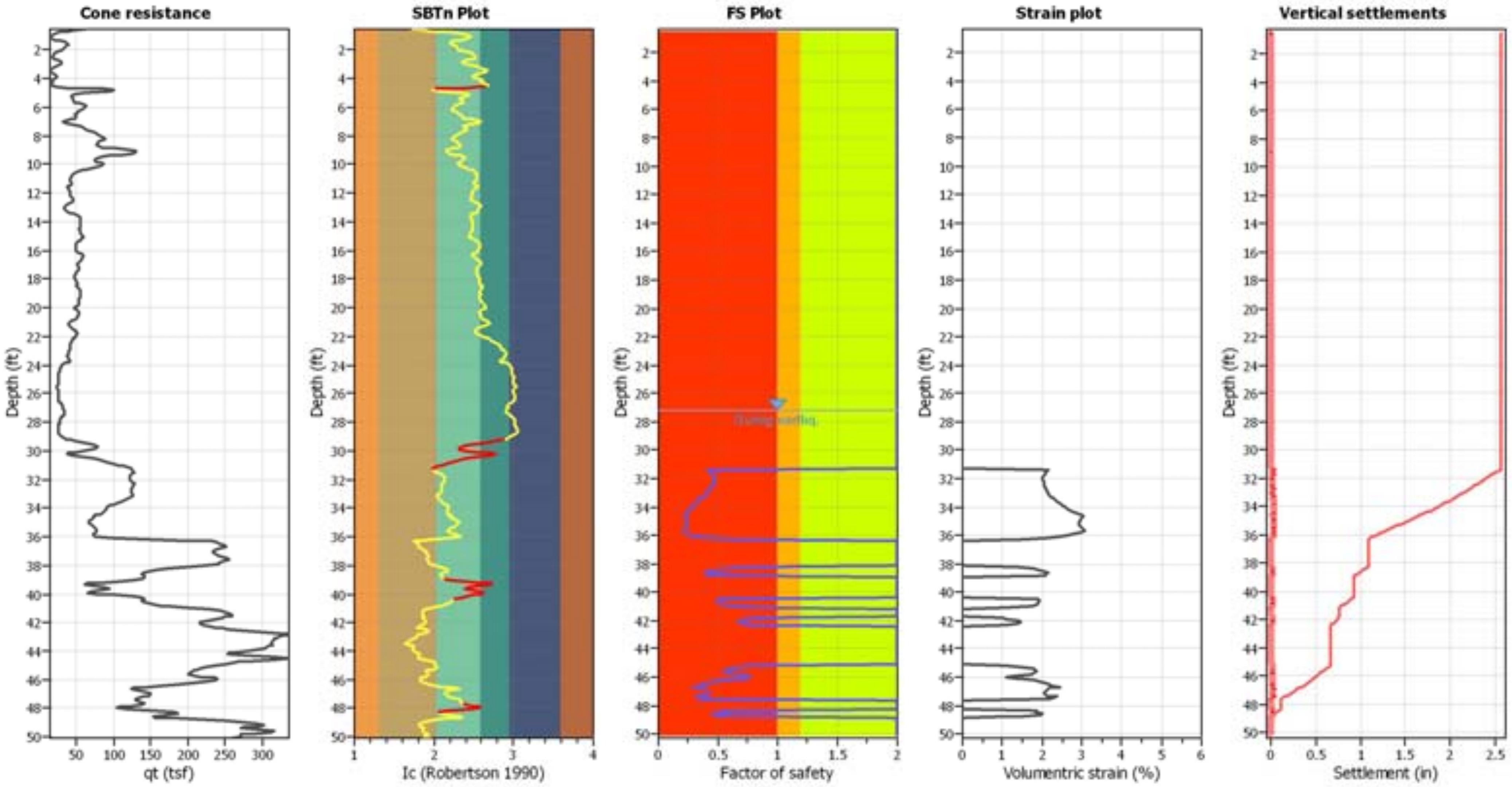
Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

Estimation of post-earthquake settlements

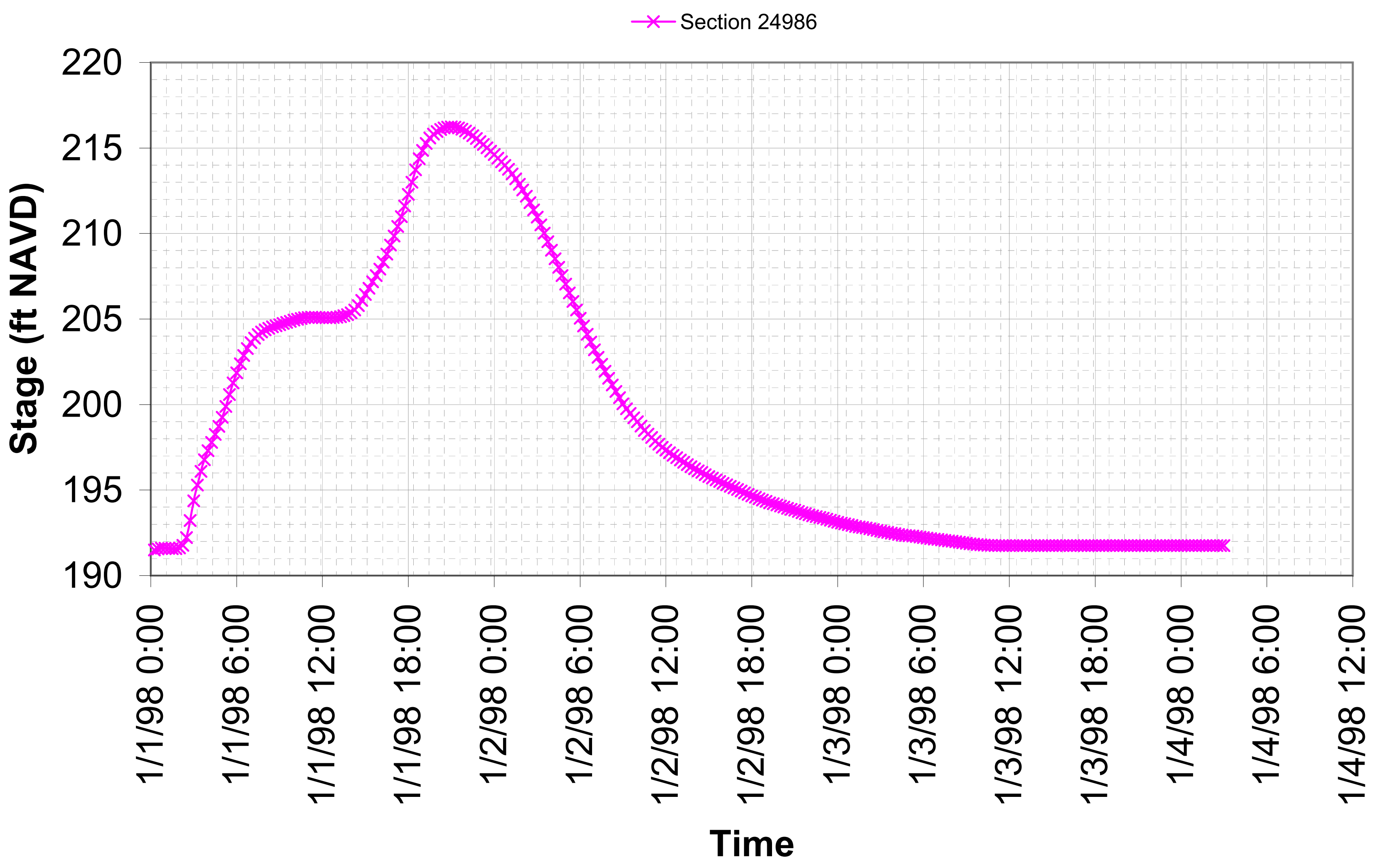


Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

APPENDIX G

Uvas Creek Design Flood Stage and Hydrograph



Stage Hydrograph for Representative Cross-section